APPLICATION OF OINTMENTS TO INTERNAL CAVITIES BY THE AID OF COLLAPSIBLE TUBES.

This method of treatment having become largely adopted, we present to the Medical profession a series of Ointments which have been thoroughly tested in the diseases indicated.

For the Urethra two kinds of Catheters are recommended :—

Fig. 1.

For GONORRHŒA and URETHRITIS.

1st.—For recent cases. A Stiff Vulcanite Catheter *Fig.* 1 is preferred (with this instrument we supply three Catheters, and it is advisable that the largest that can be passed without pain be used).

For GLEET and Long-standing Cases of GONORRHŒA.

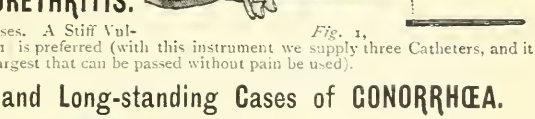

Fig. 2.

2nd.—A 9-in. "flexible" Catheter, and is intended for diseases far down the Urethra. Either of the above Catheters are supplied with Ointment Tubes containing the following medicaments :—

1. Iodoform & Eucalyptus
2. Do. do. do. & Cocaine
3. Thallin
4. Do. and Cocaine
5. Iodoform, Eucalyptus & Perchloride of Mercury
6. Dermatol
7. Aristol
8. Biniodide of Mercury
9. Hydrastin
10. Iodol and Eucalyptus
11. Sulphate of Zinc
12. Permanganate of Zinc
13. Resorcin, Hydrastin & Extract of Belladonna
14. Loretin
15. Protargol

Price complete, 5 - *each (with Cocaine*, 6 - *each*.
Ointment Tubes without Catheters, 1 6 *each; with Cocaine*, 2 6 *each; by post*, 3*d. extra.*
In ordering please specify number of the Ointment Tubes, and also whether the Stiff Vulcanite Catheters or the Long Flexible Stem is required.

For DISEASES of the RECTUM.

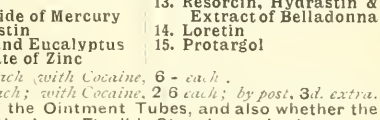

Fig. 3.

Each Collapsible Tube is fitted with a specially designed Vulcanite Pipe.

We prepare the following Ointments—

1. Boric Acid & Glycerine
2. Cocaine and Morphia
3. Ung. Gallæ c. Opio
4. Hamamelis
5. Do. and Cocaine
6. Ung. Conii
7. Ung. Belladonna
8. Chrysarobin, Iodoform and Belladonna
9. Gallic Acid & Belladonna
10. Oxide of Zinc and Boric Acid
11. Perchloride of Iron
12. Acetate of Lead and Belladonna

All the above Tubes complete with Pipe, 1 6 *each, with the exception of those containing Cocaine and Conium, which are* 2 6 *each. By post*, 3*d. extra.*

For DISEASES of the UTERUS.

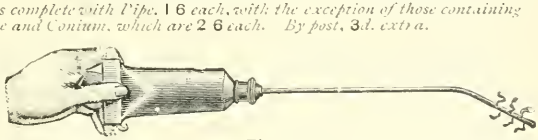

Fig. 4.

The Vulcanite Stem & Ointments have been made at the suggestion of Dr. Duke, Cheltenham.

1. Antiseptic (Iodoform)
2. Do. (Boric Acid)
3. Astringent (Tannic Acid)
4. Escharotic (Chlor. of Zinc)
5. Anodyne (Cocaine and Morphia), *useful in Cancer*

Price of Stem, with Ointment Tube of either Nos. 1, 2, 3 or 4 .. .. each 5s.
" " No. 5 .. .. 6s.
Spare Collapsible Tubes of Ointment, Nos. 1, 2, 3 and 4 .. .. 2s.
" " " No. 5 .. .. 3s.

By Post 3d. extra.

N.B.—We will be pleased to supply Tubes filled according to physicians' own formulæ.

R. SUMNER & CO. Ltd. WHOLESALE AND EXPORT DRUGGISTS, **LIVERPOOL.**

"ANTISEPTICINE" and Its Preparations.

Registered.

"ANTISEPTICINE" is a non-toxic, non-irritating, and non-escharotic antiseptic, composed of Thyme, Eucalyptol, Peppermint, Gaultheria, and Benzo-Boracic Acid. It has been found most effective in all Catarrhal conditions of the mucous membrane, and an excellent Antiseptic Dressing for wounds, either surgical or accidental.

Internally, in Diarrhœa and Indigestion, arising from fermentation, it is invaluable, and is also strongly recommended in infectious maladies, such as Scarlet, Typhoid, and other fevers, and, in fact, all Zymotic diseases. As a Spray in a sick room it rapidly purifies the atmosphere.

Price 2s. 6d. per lb.

"ANTISEPTICINE" DUSTING POWDER

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Is a strong germicidal Powder for dusting fresh wounds, burns, ulcers, or any kind of suppurating surface. It is not only an Antiseptic, but a mild Styptic and Sedative, promoting rapid Cicatrisation and Granulation.

In Dusting Bottles 1s. each, or per lb. 5s.

"ANTISEPTICINE" PASTILLES

Registered.

"ANTISEPTICINE" PASTILLES have been made at the suggestion of a medical man who found the "ANTISEPTICINE" itself so valuable in Throat Affections. Each Pastille contains five minims of the "ANTISEPTICINE."

In Boxes, 6d. each.

Or, in bulk, 2s. 6d. per lb.

"ANTISEPTICINE" TABLETS

Registered.

For the speedy production of an Antiseptic and Deodorising liquid for irrigation of the nasal, urethral, and vaginal passages, or Lotion for ulcerated throat, etc.

One Tablet is sufficient to make 10-oz. of Antiseptic Lotion.

Boxes containing 50, 1s. each.

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Registered.

A powerful Antiseptic Soap, useful in various parasitical Skin Affections, and also refreshing as a Toilet Soap.

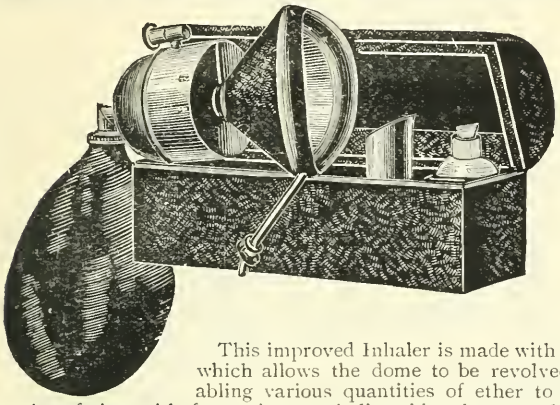
The Powder is a most convenient method for local application.

In Sprinkler Bottles, 8-doz.; Bulk, 2-per lb.

MANUFACTURED BY

R. SUMNER & CO., Ltd., *WHOLESALE DRUGGISTS,* LIVERPOOL.

SUMNER'S
IMPROVED CLOVER'S INHALER



Price

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each.

This improved Inhaler is made with a central tube which allows the dome to be revolved, thereby enabling various quantities of ether to be given without interfering with face piece or india-rubber bag. It has also a glass globe stopper by which the operator is able to see the quantity of ether that is in the Inhaler.

NAUSEOUS MEDICINES and HOW TO ADMINISTER THEM.

The Liverpool Medicinal Capsules Co.

Invite the attention of the Medical Profession to their special manufacture of **Gelatine Capsules and Perles,** which have the following advantages:

ATTRACTIVE APPEARANCE
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ACCURATE DOSAGE
FLEXIBILITY & SOLUBILITY.

The manufacture is under the guidance of a Pharmaceutical Chemist, and the utmost care is exercised to insure accurate manipulation of powerful Drugs.

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Capsules containing from 1 to 3 minims or grains are GLOBULAR—

The Larger Sizes OVOID—

Complete List containing hundreds of Formulæ on application, and any special combination can be made and forwarded by return of post.

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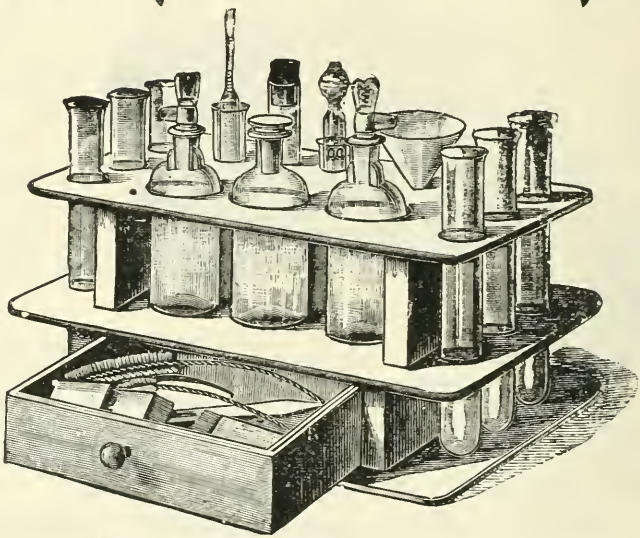
R. SUMNER & CO., Ltd., *WHOLESALE DRUGGISTS,* LIVERPOOL.

SUMNER'S
NEW URINARY TEST STAND.

PRICE 10/6 EACH NET.



PRICE 10/6 EACH NET.

Messrs. SUMNER & CO. are particularly desirous of calling the attention of medical gentlemen to their new **Urinary Test Stand.** This handy little Stand has been specially designed with a view of placing a complete set of Urinary Testing Apparatus, with Solutions, in the hands of medical men at an extraordinarily low price. We offer it as being equal in every way to the more elaborate Stands hitherto designed. Not only is it complete, but the different articles are so arranged as to take up a minimum amount of space, and, consequently, the Stand measures only 10¼-ins. by 5¼-ins. It is well and substantially made, and is really of good appearance, quite an ornament to a consulting-room table. The contents are as follows:—

Urinometer
Albuminometer
Spirit Lamp
Drop Pipette with India Rubber Suction Ball
Graduated C.C. Tube
Test Tubes
2 oz. Stoppered Bottle of Nitric Acid
2 oz. Drop Bottle of Roberts' Test Solution for Sugar
2 oz. Drop Bottle containing Esbach's Test Solution for Albumen
Funnel
Test Tube Brushes
Packet each Red and Blue Litmus Paper
Packets of Filter Paper
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Graduated Pipettes.

From the above it will be seen that, although offered at such a singularly cheap price, it is both compact and useful, and we may say, without fear of contradiction, that a Stand of such exceptional value has never before been offered at the price.

IT IS ADMIRABLY ADAPTED FOR USE IN HOSPITAL WARDS.

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ASEPTIC CABINETS.

Manufactured of Enamelled Iron, fitted with Plate-Glass Shelves with polished edges.

No. 1.
18 by 15 by 8 inches,
2 Shelves,
£2 2 0

No. 2.
24 by 18 by 11 ins.,
2 Shelves,
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No. 3.
24 by 18 by 11 ins.
3 Shelves,
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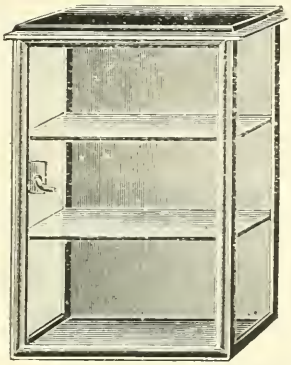

Same Cabinet but of Polished Brass, and with Mirror Bottoms;

No. 1.—
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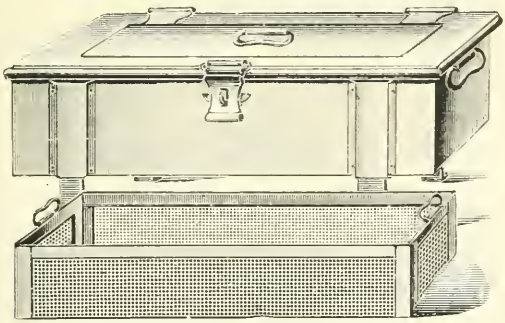
Full List of all kinds of Aseptic Furniture on application.

STERILIZERS FOR INSTRUMENTS.



Drawn one-sixth full size.

Tin, with Wire Basket - - -	**£1 4 0**
Copper, Nickel-plated - - -	**2 4 0**

List of Sterilizers adapted for all kinds and sizes of Instruments, for private use and for hospitals, on application.

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MANUFACTURER OF . . .

Surgical Instruments,

CUTLERY, BANDAGES, &c.

By Appointment to many London and Provincial Hospitals and Infirmaries; also

TRUSS MAKER to the RUPTURE SOCIETY.

Fig. 1.

Nickel Plated ASEPTIC (*Fig.* 1) POWDER SPRINKLER

Being made of metal, nickel plated, can be thoroughly sterilized.

ASEPTIC CATHETER CASE

(*Fig.* 2.)

Consisting of Glass Tube with nickel plated screw cap for holding solution in case.

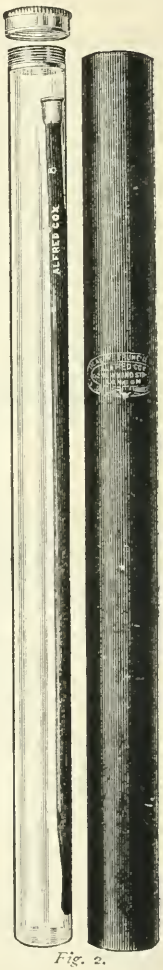

Fig. 2.

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ELASTIC STOCKINGS, BELTS, and TRUSSES
ARTIFICIAL LIMBS, CHEST EXPANDERS, SPINAL SUPPORTS, PORO-PLASTIC JACKETS, and ORTHOPÆDIC APPLIANCES
ASEPTIC INSTRUMENTS of all descriptions
STERILIZERS for Instruments, Dressings, and Milk
Personal, and Infant WEIGHING MACHINES, Portable
BATTERIES with Dry or Wet Cells
WATER BEDS, CUSHIONS, and BOTTLES.

All Orders Promptly and Carefully Executed.

Experienced Male and Female Assistants always in attendance, and, when required, wait on Customers in Town or Country.

FOR CONSTIPATION, GOUT, RHEUMATISM & OBESITY,

PRESCRIBE

Hunyadi János

THE BEST & SAFEST NATURAL APERIENT WATER.

Highest Reputation

All over the World.

THE LANCET:

"Hunyadi János." — "Baron Liebig affirms that its richness in aperient salts surpasses that of all other known waters." (1873.)

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NOTE the NAME, MEDALLION, & RED CENTRE PART on the Label.

PROPRIETOR—

ANDREAS SAXLEHNER, BUDAPEST.

UNIVERSITY WORKS,

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Surgical Instrument Factory.

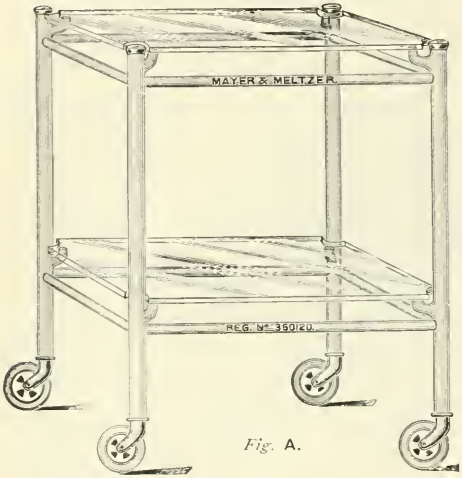

Fig. A.

Fig. A represents a new ASEPTIC TABLE designed for and now in use throughout the New University College Hospital. The glass shelves do not touch the metal in any part, simply resting on rubber pads. There is no rattle when table is wheeled about.

It is made entirely of steel tubing and round steel bars, all joints being firmly brazed and rounded to prevent collection of dust.

UNIVERSITY TABLES

(*Registered*)

SUITABLE FOR

INSTRUMENT TABLE
ANÆSTHETISTS' ,,
WARD TABLE,
WARD WAGONS,
&c.

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PRICES ON . . . . APPLICATION.

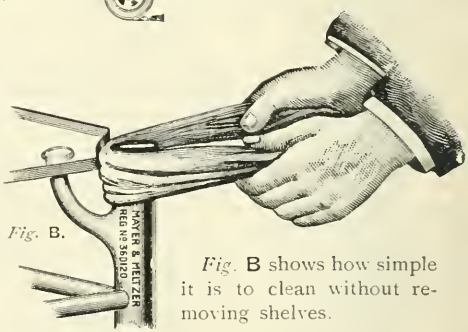

Fig. B.

Fig. B shows how simple it is to clean without removing shelves.

SOLE MANUFACTURERS—

MAYER & MELTZER,

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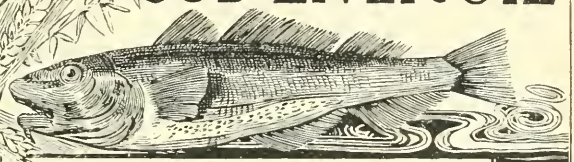
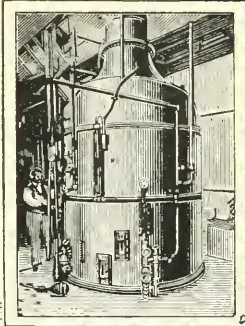
MALTINE WITH COD LIVER OIL



A COMBINATION of "Maltine" and 30 per cent. of the Purest Norwegian Cod-Liver Oil. The combination of the Oil with "Maltine" is effected by an ingenious vacuum process original with the MALTINE MANUFACTURING COMPANY, which admirably disguises the disagreeable odour and taste of the oil, prevents rancidity, and assures stability.

"The therapeutic value has been so thoroughly recognized and is so well known. . . . . Patients unable to tolerate the purest and most carefully prepared Cod-Liver Oil can readily digest and assimilate it when combined with 'Maltine.' . . . We can recommend it on the ground of its perfect admixture, the ease with which it is assimilated, the good quality of the Cod-Liver Oil, and the value in diastase of the 'Maltine.'" —*British Medical Journal.*



In prescribing "Maltine" preparations, to avoid mistakes or substitution, kindly specify "MALTINE COMPANY."

Samples sent free of Charge to Physicians.

The Maltine Manufacturing Co. Ld.

24 & 25, HART ST. BLOOMSBURY, LONDON, W.C.

BRAND'S NUTRIENT POWDER

(DENCE'S PATENT)

FROM RAW MEAT.

THIS article consists of powdered muscle fibre only, from which the moisture has been removed at a temperature below the coagulation point of the muscle proteids. It is sterilized and tasteless, and contains all the constituents of lean meat in an unaltered condition.

One ounce of the Powder is equivalent in nutritive value to four ounces of Fresh Lean Meat.

Its great dietetic importance to Invalids consists in the ease and completeness with which it can be digested, and in the fact that it can be assimilated with a minimum of effort upon the part of the digestive organs.

In the process of manufacture **nothing is removed except the water of the fresh meat, its taste and odour, and the tough, stringy and indigestible portion rejected in sifting.**

One to two ounces taken daily (equivalent to four or eight ounces of fresh lean meat) will suffice for the complete maintenance of the body-weight and healthy functions of an invalid person in a state of convalescence.

Each genuine article bears the signature—

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Prepared by BRAND & CO. Ltd.,

Of Mayfair, W. & Mayfair Works, Vauxhall, London, S.W.

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SAFEGUARD

AGAINST

BAD DRINKING WATER,

SO OFTEN THE CAUSE OF DISEASE.

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BURROW'S

"Alpha Brand"

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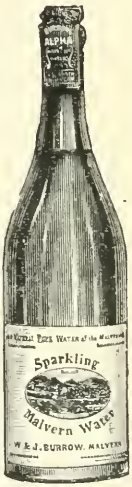
STILL AND SPARKLING.



SPARKLING.

The Purest of all Natural Table Waters.

The STILL WATER, 4/- per doz. SPARKLING, 4/6

SIX DOZEN CARRIAGE PAID.

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THE SPRINGS, MALVERN.

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BATTLEY'S SOLUTION OF OPIUM.

LIQUOR OPII SEDATIVUS (BATTLEY).

Strength—Twice that of Tinctura Opii B.P.

Battley's Solution of Opium may be given with the greatest of safety in those cases where an opiate is required or indicated, and from its great purity, absence of all hurtful matter, such as narceine and resinous bodies, is admissible when all other preparations would prove hurtful.

Liquor Opii Sedativus (Battley) having now existed for nearly 100 years, and after being opposed by vain and worthless opponents has upheld its old position as "Second to None" in the Hypnotic World

Battley's Solution of Opium has none of the disagreeable after-effects that most soporifics and hypnotics have, no nauseating or depressing influences with racking headaches, etc., but exercises a quieting and benign sway over the patient, giving him or her a refreshing sleep with freedom from pain. The last few years it has come to the front in cases of Cancer and Sarcoma, having been used widely both in private and hospital practice with great ease and comfort in these instances.

Battley's Solution of Opium never varies in strength.

Battley's Solution of Opium does not leave behind it any unpleasant effects.

Battley's Solution of Opium is now in use throughout the United Kingdom; throughout the Continent (France excepted); the Colonies, and largely in America, both South and North; and we ask all those who have not tried Battley's Solution of Opium to send for Samples (Free).

The "Medical Annual," speaking of Opium says: "**Battley's Solution of Opium** is a common word in the Practitioner's vocabulary. It has gained its reputation by its intrinsic value as a remedy which contains all that is sedative and anodyne in opium without its resinous constituents which are, therapeutically speaking, impurities."

The "Lancet," speaking of Opium, says: "New Hypnotics come and go, each with hopeful forecast of being superior to those already known, each in turn aspiring to give **peaceful refreshing sleep**, which shall be followed by no **unpleasant after-effects**; and yet, in the minds of many thoughtful practitioners, opium and its preparations still maintain their ground." We would point out to the Medical Profession that Battley's Solution of Opium has for the past eighty years answered these **three** most important requirements, and stands out above all other hypnotics in excellence.

LIQUOR OPII SEDATIVUS.

The striking appearance resulting from the evaporation of Battley's Sedative (*Plate III. Fig.* 1) first drew our attention to the mode of investigation now described. We have examined it frequently, and always have met with the same characters. The slides present an almost opaque mass of crystals of morphine salts and codeine, with a very small portion of narcotine (and meconic acid ?), and so far as we have observed, complete absence of resinous matter and narceine. **Any one who has studied the microscopic characters of this preparation will readily understand how it has kept its place with the Profession in spite of the cheap imitations which have been so largely puffed as substitutes for it.** Though we have experimented much with a view to preparing a similar liquor, we have not yet arrived at an identical result.

We do not guarantee our Preparations unless in original bottles, with the autograph of RICHARD BATTLEY over each cork and on the label, *without which none is genuine.*

An Assurance that means something.

In the digestion of fat, Nature makes a certain amount of glycerine. There must be a special object in view. What is this object?

We believe the most important use of this glycerine is to prevent fermentation, and thus avert the danger from the absorption of poisonous toxines or ferments caused by fermentation. We all know the dangers in fermentation and imperfect digestion of food.

The glycerine in Scott's Emulsion has therefore a special significance, aside from its value in sweetening and preserving the cod-liver oil. It is in accord with the processes of Nature, and in many ways it facilitates the absorption of the oil.

The hypophosphites of lime and soda, and the cod-liver oil itself, need no comment. They are always associated with the name Scott's Emulsion.

When Scott's Emulsion is prescribed by the medical profession, therefore, there goes with it an assurance of safety and merit that means something.

SCOTT & BOWNE, Ltd., Manufacturing Chemists, London, E.C.

NESTLÉ'S FOOD

An ENTIRE DIET for INFANTS, CHILDREN AND INVALIDS.

"Renders valuable assistance in Wasting Fever."

"Beneficial as a diet in severe cases of Typhoid."

"Invaluable in Cholera Infantum."

Pamphlet containing Extracts from Standard Medical Works in which the above Testimony is given sent free, with Sample Tin, on application to H. NESTLE, 48, Cannon Street, London, E.C.

The attention of the Medical Profession is also drawn to

NESTLÉ'S SWISS (CONDENSED) MILK

Which, through its RICHNESS in CREAM and UNIFORMITY of QUALITY, has obtained the Largest Sale in Great Britain. It can be used for all purposes of FRESH MILK.

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THE LANCET says:

"Kelpion is a marked advance upon ordinary iodine unguents and is especially suitable in painful affections of the joints and for sprains and inflammations."

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Stainless, Non-Irritating
IODINE OINTMENT.

A Perfect Substitute for Tinct. Iodi and Liniment. Iodi.

OF CHEMISTS AND WHOLESALE DRUGGISTS—
In ½-oz. and 1½-oz. pots; also ½-lb. jars unstamped for Dispensing.

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For NOSE or THROAT,
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TO WHICH IS ADDED
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BY A SLIGHT MODIFICATION IT CAN BE CONVERTED INTO

An Improved Politzer Air-Bag

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DESIGNED BY AND MANUFACTURED SOLELY FOR

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By Appointment to the Honourable Council of India,
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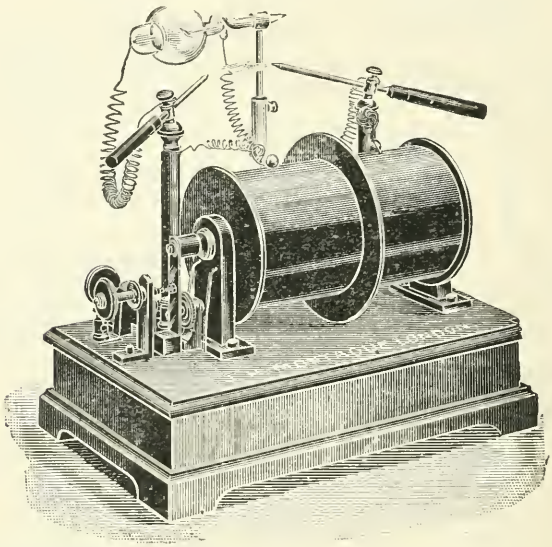

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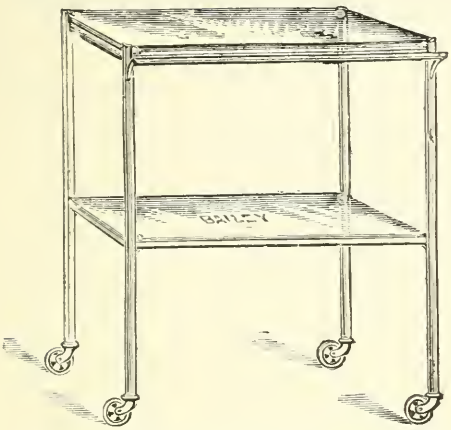

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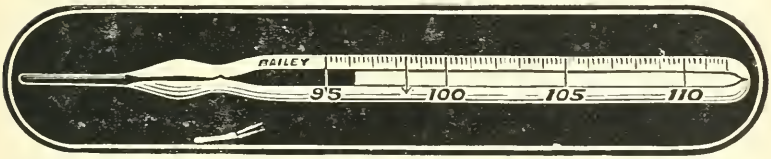

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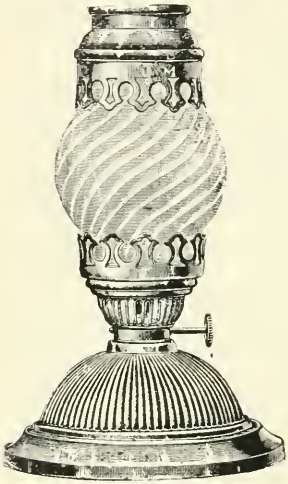

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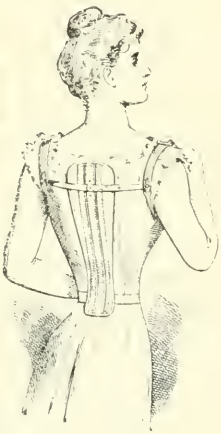

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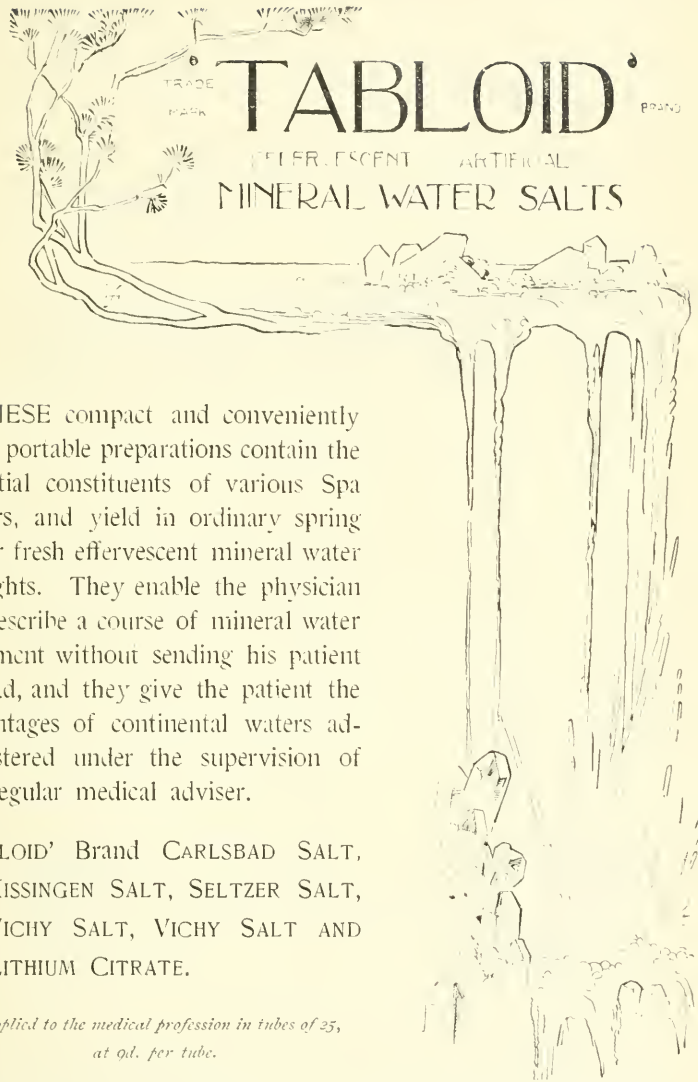

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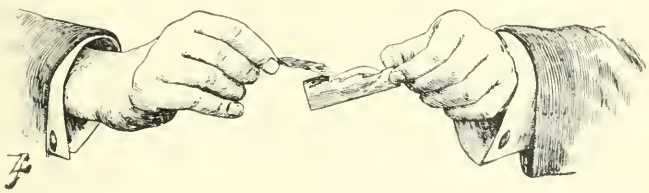

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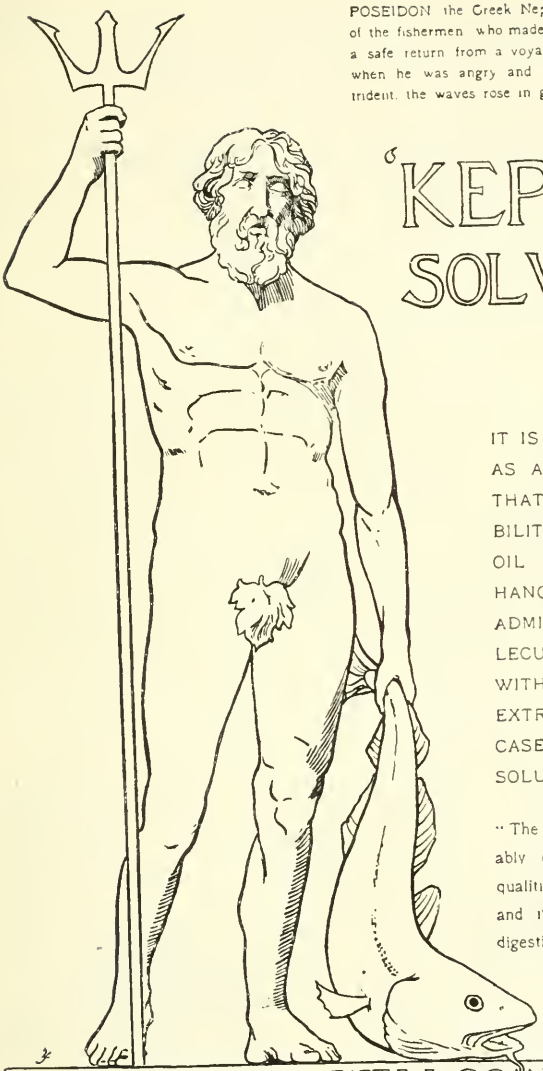

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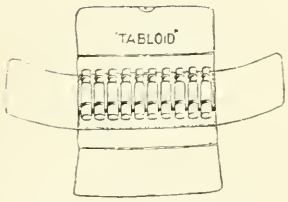

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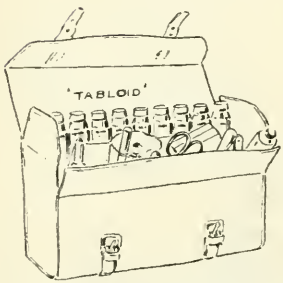

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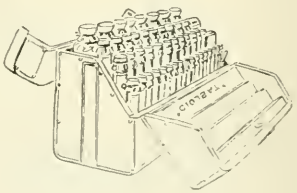

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A YEAR BOOK OF TREATMENT AND PRACTITIONER'S INDEX.

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PREFACE.

In preparing the nineteenth issue of the "Medical Annual" we have followed the lines which have met with the approval of our readers in former editions.

In the department of Therapeutics we have added a special article on Toxins and Antitoxins, the conjoint work of Professor McFarland, of Philadelphia, and Dr. William Murrell, and the latter also contributes a special article on the "Light" Treatment.

In the Dictionary of New Treatment will be found articles covering the whole range of medicine and surgery, contributed by authors whose names are mostly familiar to our readers from long association with the "Medical Annual."

Amongst the new contributors will be found the name of Professor Ruata, of the University of Perugia, Italy, whose contribution on Tuberculosis is of great practical value. It may be of interest to our readers to know that this article was written in English by the author, and is not a translation.

Special articles on X-Ray Work in Medicine and Surgery have been written by Dr. Macintyre, of Glasgow; on Colour-Blindness, by Dr. Edridge-Green; and on Dental and Oral Surgery, by Mr. Turner, F.R.C.S.

No effort on our part has been spared to make this volume a faithful reflex of present views, and we trust that it will prove of no less practical value than its predecessors.

The "Medical Annual" Offices,
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THE MEDICAL ANNUAL.

PART I.—THERAPEUTICS.

The Dictionary of New Remedies,

AND REVIEW OF THERAPEUTIC PROGRESS FOR 1900.

By WILLIAM MURRELL, M.D., F.R.C.P.,
Phys. and Joint Lect. on Medicine, Westminster Hospital.

TOGETHER WITH AN ARTICLE ON "TOXINS AND ANTITOXINS," THE JOINT PRODUCTION OF WILLIAM MURRELL, M.D., AND PROF. JOSEPH MCFARLAND, M.D., PHILADELPHIA.

INTRODUCTORY.

PHARMACOLOGY.

IN the "Medical Annual" for 1899, and again in 1900 it was pointed out that in consequence of the decline in the study of Pharmacology a race of medical men was growing up who knew nothing about drugs or their actions, and who were incapable of prescribing even the simplest mixture. This view was endorsed by Prof. Bradbury[1] of Cambridge, in the address which he delivered before the British Medical Association at Portsmouth and has since secured striking confirmation at the hands of Prof. Walter Smith[2] of Dublin, who says: "The decline in the art of prescribing has been a frequent subject of lament of late years, and with some practitioners it is to be feared that the atrophy of disuse has almost blighted their capacity to think out and indite a good prescription." This he thinks is due partly to the rapid changes which have swept over modern pharmacy and partly to the ultra-fastidiousness of the public who will only take medicines put up in an agreeable form. He hopes however that there still remains some scope for the educated practitioner who, whilst not disdaining convenient and palatable medication, wishes to choose his own combinations and to use his own judgment as to the forms in what they should be cast.

There has been considerable discussion during the past year on the object and scope and on the best methods of teaching Pharmacology,

and here again Dr. Walter Smith[3] has something to say. He points out that the rise and growth of the science of pharmacology, which was founded by Bichat and Magendie early in the century, has made it plain that all correct appreciation of the mode of action of drugs must be based upon physiology and pathology. The new departure has gradually leavened our conceptions of therapeutics and rendered the teaching of this branch alike more intelligible to the student and more satisfactory to the teacher.

Comparing the teaching of materia medica and therapeutics thirty years ago with the present time three features stand out prominently: (1,) The retrogression of descriptive materia medica in its restricted meaning; (2,) The establishment of special courses in practical pharmacy at the medical schools, conducted in suitable laboratories; and (3,) The development of pharmacology in its present acceptation —that is, the scientific investigation of the modes of action of drugs. A modern course of lectures on materia medica should most certainly be founded on the bed-rock of pharmacology—that is, physiology.

The author points out that within the last fifteen years the theories of Van't Hoff and his followers upon the nature of dilute solutions, based upon certain physical data — namely, osmotic pressure, alterations of the boiling-point and freezing-point—together with Arrhenius's hypothesis of ionic dissociation have largely engaged the attention of physicists and chemists, and have not failed to make their impress upon pharmacological investigations. The earliest reference to Van't Hoff's researches is contained in a paper by Hofmeister,[4] and in a suggestive article by Dreser.[5]

Arising indirectly out of the discussion on the difficulties experienced by many practitioners in writing a real prescription several papers have appeared on *incompatibility*, and here again a communication by Dr. Walter Smith[6] must be laid under contribution. The author defines incompatibility as "any unintentional change which notably interferes with the elegance, usefulness, or safety of a prescription."

The subject of so-called therapeutical incompatibility is not included in this definition, for it belongs to a different sphere and its principles are taught by the science of pharmacology.

Neither does it include what is often termed pharmaceutical or physical incompatibility, such as errors of solubility, precipitation of resinous or oily solutions by the addition of water, choice of pill excipients, and such like matters.

The author's observations deal with the chemical aspects of prescribing, from a practical and everyday point of view. Even

with these limitations the subject of incompatibility is a broad and almost endless one.

For the number of possible combinations is infinite, and no rules will provide against all possible or even likely cases. Moreover, new drugs bring with them new problems, and some of the recent complex synthetic preparations, *e.g.*, antipyrine, do not readily lend themselves to general rules, and have a number of special incompatibilities.

It is a good plan to have as little chemical action as is possible taking place among the ingredients of a prescription, unless such is clearly ordered or intended.

This rule holds good, although it must be admitted that some chemical precipitates may be dissolved in the stomach with comparative facility. If only on the ground of elegance such precipitates should be avoided.

The author gives a number of examples of incompatibility and incidentally refers to the subject of *explosive prescriptions* and compounds.

A medical man was sent a sample specimen of erythrol tetranitrate. He carelessly threw the bottle containing it into the waste-paper basket. Next morning the basket was emptied into a dust-pan containing hot ashes. An explosion ensued; the servant was partially stunned, and received wounds on the hands, arms and face.

The author gives a word of warning with respect to peroxide of sodium which is extensively employed as a bleaching agent. It at once sets glycerin on fire, and if added to a solution of formic aldehyde produces a violent explosion.

Dr. Gordon Sharp[7] deals with the subject of incompatibility in prescribing chiefly from the pharmacological side of the question. He says it matters not how deep a man's knowledge of chemistry, physiology, and pharmacy may be; sooner or later he finds himself transgressing the fundamental canons of these sciences in his prescribing. Let him be ever so careful he finds on looking over his prescription book that he has broken the laws of compatibility times without number, and has prescribed compounds which would shock the feelings of the pharmacist's youngest apprentice. These faults no doubt arise from the desire to attack the diseases of our patients at as many points as possible.

The author makes the following systematic division of incompatibles: (1,) Chemical; and (2,) Physiological, or more properly pharmacological. This second may be divided into (*a*,) cases in which two or more drugs or chemicals are prescribed, the one having an action the very opposite

of the other, as, for example, a drug increasing reflex irritability and one reducing the reflex irritability; and (*b*,) cases in which we apparently prescribe drugs or chemicals at variance with the accepted pathology of the particular disease we are then treating.

He illustrates his remarks by reference to the folly and danger of prescribing strychnine and the bromides together.

Drug Habitudes and Idiosyncrasies.

Dr. Paul Simon[8] has published a contribution on the subject of habitude and idiosyncrasy with respect to drugs. His remarks are by no means novel, but he covers a good deal of ground which has long been familiar to us. He refers to the diagreeable effects of the first pipe of tobacco, or cigar, and of a first debauch, pointing out in both cases tolerance is very soon established in the use both of alcohol and tobacco. He remarks that very often the hypodermic employment of morphine is very far from producing the agreeable effects usually associated with its habitual use. These facts are in accord with the results of experimentation. It is only necessary to refer to the tolerance for quinine acquired by infusoria through culture in weak solutions of that drug, to the immunity of dogs to atropine, and of immunised animals to the most powerful toxins.

There are numerous conditions which modify the manner in which drugs act, and may oppose an obstacle to the acquirement of toleration, or, on the other hand, may give increased resistance on the part of the recipient.

Age is a very important element. As a rule, old people are less tolerant than are adults. Infants and children are also very susceptible, so that the two extremes of life resemble one another in this respect. Cases have been noted in which a single drop of laudanum has caused in young infants signs of poisoning. It is a curious fact, showing the influence of heredity, that the infants of morphinomaniac mothers are tolerant of opium. In such cases doses of laudanum which would have fatal effects on normal children may be required to produce any result in calming the infant whose toleration of the drug is due to the excesses of its mother. On the other hand, young children are bad subjects for the administration of carbolic acid, iodoform and saccharin.

Certain morbid conditions may cause marked variation in the action of drugs as regards toleration. In some cases the effects are increased, in others diminished. The action of a variety of organs, such as the kidneys, thyroid gland, liver, etc., are all more or less involved in this matter. From the clinical side the supervention of

an acute disease may notably diminish the toleration of a particular drug. The supervention of delirium in alcoholics, who are saturated with the drug when they become the victims of acute rheumatism or of pneumonia, is a case in point. On the other hand, an acute malady may render a patient tolerant of a drug to an extreme degree —witness the amount of alcohol taken by fever patients without producing any symptom of intoxication.

The author passes on to consider the subject of idiosyncrasy as regards drugs. Such cases are found in connection with the employment of morphine, arsenic, bromide and iodide of potassium, and other drugs. It is pointed out that some drugs are incapable of being taken for long periods without the production of toxic symptoms. In other words, tolerance with regard to these drugs cannot be induced. A striking example is mercury. After a time symptoms of ptyalism will invariably follow the use of this remedy. The drugs which are capable of being used for long periods without unpleasant symptoms occurring are chiefly those which act on the nervous system —cocaine, haschish, opium, tobacco, etc.

The author has simply sought to arrange and co-ordinate the clinical facts, and has not attempted to discuss the method by which toleration of drugs is established.

Dr. Combemale[9] in an article entitled : "L'Heure du Médicament," calls attention to certain points which are often either not considered at all, or if considered are dealt with in the most cursory manner. The author commences with the consideration of the appropriate hour for administering hypodermic injections, remarking on the tendency of morphine when given by this method to cause vomiting, so that it should be given at as remote a period as possible from the time of taking food. Again, hypodermic injection of caffeine should be made in the morning on account of its tendency to cause sleeplessness. Rectal suppositories should be introduced at different hours, according to the effect which they are intended to produce. In cases of anal fissure they should be employed immediately after defæcation ; the glycerin cone for the cure of constipation ought to be employed either late at night or in the early morning.

It is the same with inhalations for asthma ; they should be used when the attack impends, not haphazard during the day. Lavage of the stomach, the application of drugs to the fauces, etc., should not be employed after a full meal, but when the stomach is empty. In the same way the administration of drugs by the mouth should be conducted on the same principles in order to obtain their full and satisfactory effect. Arsenic, for instance, should be given after food.

The author refers to the "orgies" in the consumption of iron by chlorotics, and the disastrous results of such excesses on the functions of the stomach. The enormous doses of this metal often administered are prejudicial to the digestive function, and it is possible that they may account for a good deal of the dyspepsia and constipation met with in anæmic girls.

Addendum to British Pharmacopœia.

The Indian and Colonial Addendum to the British Pharmacopœia was published in December, 1900. It is the first step in the production of an Imperial Pharmacopœia. We are told that it is, to a certain extent, provisional, that it is supplementary to the Pharmacopœia of 1898, and that it is to be regarded as preliminary to the next Pharmacopœia. The drugs and preparations included in the list are to be prescribed by medical practitioners according to their own judgment of their value, and it is not intended that they should be substituted by dispensers for similar articles already in the Pharmacopœia, except in those cases where authority for such substitution is expressly indicated in the text.

William Mair [16] points out that of the forty or fifty new medicinal substances and the corresponding number of pharmaceutical preparations the majority are those requested by India, and incorporated into the Addendum at the suggestion of Indian authorities. He is of opinion that the following drugs are worthy of a more general recognition in this country:—

Andrographis paniculata (the kreat, the dried herb).—This is one of the many simple bitters of India, and should be used in addition to chiretta, not as a substitute for it. One of its vernacular names implies "king of bitters." It contains a neutral non-alkaloidal bitter principle as yet unnamed, and has febrifuge properties which chiretta does not possess. For that reason it is appreciated in India and is frequently prescribed in convalescence after fevers.

Belæ fructus.—Although tried in this country and found wanting the sacred bael is, as it always has been, the most trusted of Indian indigenous medicines. It is constantly prescribed by European physicians, and is of unquestionable value in **Diarrhœa,** especially in children. An aqueous fluid extract from the pulp of the fresh half-ripe fruit, instead of that "imported in dried slices," would redeem its character. Another preparation in great favour in India is a confection of bael, sometimes aromatised, a valuable dietetic in tea-

spoonful doses in chronic diarrhœa, made from the pulp of the fresh just ripe fruit freed from the seeds by passing through a coarse sieve and preserved with sugar. For the extract the fruits, freshly imported whole, would require to be used ; the confection would be best prepared on the spot and imported after the manner of tamarinds and chutnies.

. *Ispaghula* (seeds of Plantago ovata).—These minute boat-shaped seeds are imported from Persia. They contain no medicinal principle, but are successful as a remedy in **Diarrhœa** and **Dysentery** and as an intestinal emollient in **Gastric Catarrh**. The simplicity of their action is such that no preparation can be suggested. One drachm of the cleaned seeds is infused for twenty minutes in 5 ozs. of cold water, sweetened with sugar, and the resulting mucilaginous mass is swallowed unstrained. The action is purely mechanical, the abundant, bland, adherent mucilage allaying the intestinal irritation.

Holarrhena antidysenterica (kurchi, root-bark).—This comes next to the bael in the estimation of European prescribers in India among indigenous medicines. The active principle is the alkaloid kurcheine and the properties are mildly **Astringent, Anti-dysenteric**, and **Febrifuge.** Both a solid and liquid extract are used in India, the latter being the better.

Garcinia Mangostana (mangosteen rind ; imported from Singapore).—This drug contains tannin, resin, and a yellow crystallisable principle, mangostin, and is used in the same way as kino or catechu, but is less frequently prescribed. It may be used in the form of a syrup made by boiling the rind in water and adding sugar to the strained decoction. A better process is to make the syrup from a fluid extract made with 20 per cent. alcohol.

Carica Papaya.—The importance of the papaya fruit cannot be over-estimated, and it will be given a place in the Addendum for the sake of the well-known papain, as an alternative to pepsin, if only on the ground of caste prejudice. Liquor papain made from the fresh milky juice and preserved with glycerin is also in vogue as a successful **" Vegetable Pepsin."**

Eugenia Jambolana (jambul seeds).—Although this drug has not fulfilled its expectations as a remedy in **Diabetes** it is still worth a trial. It is used by the people and prescribed by native physicians. The secret may perhaps lie in making the aqueous liquid extract from fresh seeds from ripe fruit.

Gynocardia odorata (chaulmugra seeds).—The value of the expressed oil in **Eczema, Psoriasis**, and allied skin affections, is too

well known to call for comment. It is largely prescribed for external use, and in the form of a cream made with equal parts of the oil, lanolin, and lime water.

Adhatoda vasica (leaves).—This drug is used in **Pulmonary Affections** and is an **Internal Antiseptic**. It contains a white crystalline alkaloid, vasicine, sparingly soluble in water but soluble in alcohol. The drug is strongly alkaline, due to the presence of potassium chloride.

It will be noted that many of the drugs—*Carica Papaya* and *Gynocardia odorata*—have already been extensively employed in this country.

Organotherapy.

Organotherapy has made less advance during the past twelve months, and indications are not wanting that the hold of this method of treatment on the medical profession is not so firm as it was a year ago. Observations on cerebrin, spinal cord substance, ovarian juice, and prostatic gland have not answered their expectations, and the results as a rule have been indecisive even when not unsatisfactory.

A great deal of work, chiefly from a scientific point of view, has this year been done in connection with the serum treatment of disease. This is dealt with fully in the article on "Toxins and Antitoxins." It will be noted that Maragliano's [11] serum treatment of **Tuberculosis** still continues to attract some attention. On the other hand Koch's tuberculin R [12] as a remedy for **Phthisis** has failed to answer its expectations.

German Synthetical Products.

Numbers of synthetical products made in German workshops are constantly issued under coined or fanciful names as "substitutes" for well-known drugs. The majority of them are practically proprietary articles, sold at a high price, and it is probable that very few of them will obtain a permanent position as therapeutic agents. They are largely advertised for a time and then die of inanition. A recent writer [13] sums up our position with respect to these drugs very neatly. He says: "The English language contains many words which represent approximately the same meaning, but we are assured by competent lexicographers that there are shades of differences in their meanings which render a particular word most suitable in a particular circumstance or environment. Doubtless it is so with drugs. Patients have absolutely inexplicable idiosyncrasies, and diseased conditions, if we may be pardoned the expression, seem to have their idiosyncrasies also. An attack of neuralgia which has steadily resisted the

most fashionable analgesic will sometimes yield to the subtle influence of another comparatively unknown agent, belonging to the same chemical series, and a patient who is gravely inconvenienced by one drug of a class experiences nothing but benefit from another. As a matter of fact, moreover, we do not find practitioners so bent on experimenting with new drugs for the relief of diseases or symptoms for which adequate remedies exist in the official collection. The analgesics were ultimately received with something like a craze, simply because, as a class, they were quite unrepresented in the then existing British Pharmacopœia, but even so it was long before they made any headway, and it took ten or fifteen years of hard advertising before antipyrine came to be generally known."

The best pharmacological work of late has been done in connection with old and well established remedies—iron and digitalis for example. Senecio continues to hold its own, and now that its pharmacological action has been placed on a firmer footing is likely to be more extensively employed. Of food products Plasmon is the most recent introduction, and has been found useful in **Enteric Fever** and in the **Wasting Diseases** of **children.**

The following is a list [14] of comparatively recent drugs known by fanciful or coined names :—

Acetol.—A name given to silver lactate, which is recommended like itrol (silver citrate) as an antiseptic in gonorrhœa and gonorrhœal ophthalmia.

Agathin.—Salicyl-*a*-methyl-phenyl-hydrazone. Antirheumatic.

Airol. Bismuthoxy-iodogallate. Antiseptic.

Alpha-eigon.—An iodine compound of albumin, containing 20 per cent. of albumin. Alpha-eigon-sodium is the sodium compound, soluble in water, and containing 15 per cent. of iodine. Beta-eigon is an iodine-peptone compound.

Alumnol. — Aluminium naphtho-sulphonate. Astringent. Antiseptic.

Analgen.—Ortho-ethoxy-ana-mono-benzoyl-amidoquinoline. Antipyretic. Analgetic.

Anilipyrine.—Obtained by melting together 1 part of acetanilide and 2 parts of antipyrine. It is fairly soluble in water, and is stated to have given good results in influenza and rheumatism. The dose is from 5 to 15 grains, three times a day.

Antiscabine.—A mixture of Peruvian balsam, Castile soap, glycerin, beta-naphthol, boric acid, and alcohol. Introduced as a remedy for scabies, to be applied two or three times a day.

Antiseptol.—Cinchonine iodosulphate. Antiseptic.

Anytin.—A 33 per cent. aqueous solution of ichthyol-sulphonic acid, one of the principal constituents of ichthyol; used in dermatological practice.

Argentamine.—An amido-compound of silver. It has been recommended as a substitute for nitrate of silver, being less irritating and a superior antiseptic, in conjunctival diseases.

Argonin.—Silver caseinate. Antiseptic.

Aristol.—Di-thymol-diiodide. Antiseptic.

Asaprol. — Calcium-beta-naphthol-sulphonate. Antirheumatic. Antituberculous.

Aseptol.—Phenol-sulphonic acid.

Benzosol.—Benzoyl-guaiacol. Antituberculous. Antiseptic.

Bismal.—Bismuth-methylene-digallate. Astringent.

Bromol.—Tri-bromo-phenol. Antiseptic and disinfectant.

Captol.—A condensation product of tannic acid and chloral. It is a dark-brown hygroscopic powder, slightly soluble in cold, more soluble in warm water and in alcohol. Recommended as an antiseptic astringent in the treatment of falling off of the hair from seborrhœa, etc.

Chloralamide.—Chloral formamidate. Hypnotic and analgetic.

Citrurea.—A compound (probably a mixture) of citric acid, urea, and lithium bromide, said to be useful when the effect of urea and lithium is desired.

Creolin, *lysol*, *solveol*, and *solutol* are more or less impure cresol mixtures obtained from coal tar.

Creosol.—Homo-pyro-catechin-mono-methyl-ether. Antiseptic.

Dermatol. — $Bi(OH)_2C_7H_5O_5$ — Bismuth subgallate. Astringent. Antiseptic. Largely used as a dusting powder.

Diuretin.—$C_7H_7N_4O_2.Na + C_6H_4(OH)CO_2N$ — Theobromine-sodium-salicylate. Diuretic.

Durol.—Tetra-methyl-benzol.

Eucaine hydrochloride.—$C_{19}H_{27}NO_4.HCl + H_2O$—Benzoyl-methyl-tetra-methyl-γ-oxy-tetra-piperidine-carbonic-methyl-ester hydrochloride. Local anæsthetic. Largely used in ophthalmic practice.

Euphthalmine hydrochloride.—The amygdalic acid derivative of methyl-vinyl-diacetone alkamine. It is colourless, crystalline, and freely soluble in water. It has a powerful mydriatic action in 5 or 10 per cent. solutions. It is asserted that its action is superior to that of homatropine.

Eurobin.—A compound of chrysarobin and acetic acid, apparently an acetate of that body, introduced as superior to chrysarobin in dermatitis.

Europhene. — Iso-butyl ortho-cresol-iodide. Antiseptic. Anti-syphilitic.

Ferrosol.—A double compound of ferric saccharate and saccharate of sodium chloride. It is a clear, dark-black liquid, strongly ferruginous and saline. Recommended in chlorosis and anæmia, in teaspoonful doses three times a day.

Gaiacyl.—The calcium salt of guaiacol sulphonic acid. It occurs as a grayish-violet powder, soluble in water and in alcohol, insoluble in oils. It is employed as a local anæsthetic in 5 or 10 per cent. solutions.

Gelante.—A new dressing recommended by Unna, prepared from tragacanth and gelatin, with the addition of a little glycerin, rose water, and a trace of thymol. Various antiseptic medicaments can be added.

Geosote.—Guaiacol valerianate. It is an oily liquid, with a sweetish taste, and has been recommended in pulmonary catarrh, and injected subcutaneously in tuberculous glands or joints.

Guaethol or Guäthol. — A derivative of guaiacol in which the methyl group is replaced by ethyl. It is an oily liquid, and has an aromatic odour. Its analgetic action is stated to be superior to that of guaiacol; it is used as an ointment, 1 part to 6 of vaseline.

Guaiacol Carbonate.—Guaiacol-ester carbonate. Antituberculous antiseptic.

Guaiacol, synthetic. — Pyro-catechin-methyl-ether. Antituberculous antiseptic.

Guaiaquin —Obtained by the action of guaiacol-sulphonic acid on quinine. It occurs as a yellow odourless powder, with an acid bitter taste, readily soluble in water, alcohol, or acids. Recommended in anæmia, malarial disease, etc.

Heliotropine (Piperonal). — Proto-catechu-aldehyde-methyl-ester. Antiseptic. Antipyretic. Used in perfumery.

Hypnal.—Chloral-hydrate-antipyrine. Analgetic. Antipyretic.

Hypnone.—Phenyl-methyl-ketone-aceto-phenone. Hypnotic.

Iodol.—Tetra-iodo-pyrrol. Antiseptic.

Itrol.—Silver citrate. Antiseptic in treatment of wounds.

Lactophenine.—Lactyl-amido-phenol-ethyl-ether.

Lacto-somatose.—A compound of somatose and desiccated milk, asserted to be a strength-giving food, containing the albuminous matter of milk.

Loretin.—Ortho-oxyquino-line-μ-iodo-ana-sulphonate. Antiseptic.

Losophan.—Tri-iodo-meta-cresol. Astringent. Antiseptic.

Lycetol.—Dimethyl-piperazine-tartrate. Analgetic. Diuretic.

Lysidin.—Methyl-di-hydro-glyoxaline uric acid. Solvent.

Malakin.—Salicyl-amido-phenol-ethyl ether. Antiseptic. Analgetic.

Microcidin.—Sodium beta-naphtholate. Used in antiseptic surgery.

Mydrin.—A combination of ephedrine hydrochloride and homatropine, used for dilating the pupil. It is said that a 10 per cent. aqueous solution causes mydriasis quickly, without affecting accommodation or causing discomfort.

Nosophene.—Iodo-phene. Tetra-iodo-phenol-phthalein. Antiseptic. Disinfectant.

Orthoform.—Para-amido-μ-oxy-benzoic-methyl ester. Local anæsthetic.

Ossalin.—A fat prepared from fresh bone marrow, resembling lanolin in its property of absorbing water. It is neutral, grayish, and has the odour of tallow. Recommended as an ointment basis.

Peronine.—Benzyl-morphine-hydrochloride. Narcotic.

Phenocoll hydrochloride.—Amido-acet-phenetidine-hydrochloride. Analgetic. Antirheumatic.

Piperazine.—Diethylene-diamine. Antirheumatic.

Piperonal.—Heliotropine (*q.v.*)

Protargol.—A fine yellowish powder consisting of silver combined with a protein substance, and containing 8·3 per cent. of the metal. It is soluble in water, and the solution does not stain the skin or cause irritation, like most other silver salts. It possesses marked bactericidal properties; for injections $\frac{1}{4}$ to $1\frac{1}{2}$ per cent. solutions are used.

Pyrosal.—The salicyl-acetate of antipyrine. It is soluble in water, and recommended as an antithermic and antineuralgic, in doses of from 5 to 10 grains.

Resorcinol.—Iodoform and resorcin. Antiseptic dressing.

Salacetol.—Acetol-salicylic-ester. Antiseptic. Antirheumatic.

Salipyrine.—Antipyrine salicylate. Antipyretic. Analgetic.

Salophene.—Acetyl-para-amido-salol. Antiseptic. Antipyretic.

Symphorol N.—Caffeine sodium sulphate. Diuretic. There are also lithium and strontium salts.

Tannalbin.—Tannin albuminate. Astringent.

Tannon, or Tannopine.—A condensation product of tannin and hexamethylenetetramine or urotropin $6(CH_2)N_4.(C_{14}H_{10}O_9)_3$. It is a light-brown powder, free from taste or odour, insoluble in water or alcohol. Recommended as an intestinal astringent, especially in tuberculous enteritis and typhus.

Tannigen.—A compound of acetic acid and tannin. An intestinal

astringent, and most efficacious in chronic, acute, and summer diarrhœas. Dose for an adult, 8 grains every three hours.

Terpinol.—Terpin hydrate derivative. Used in bronchial affections and in perfumery.

Thalline sulphate.—Tetra-hydro-paraquinanisol sulphate. Hæmostatic and antiseptic.

Thermodine.—Acetyl-π-ethoxy-phenyl-urethane. Antipyretic. Antiseptic.

Thiocol.—The potassium salt of guaiacol-sulphonic acid, containing about 60 per cent. of guaiacol. It is a fine white powder, with a bitter-sweet taste, soluble in water, recommended as a substitute for guaiacol.

Triphenine.—Proprio-nyl-phenetidine. Analgetic. Antipyretic.

Validol.—A combination of menthol and valerianic acid with an excess of menthol. It is a colourless fluid, possessing powerful stomachic and carminative properties. The dose is from 10 to 15 drops, either on sugar or in wine.

REFERENCES.—[1] "Medical Annual," 1900, p. 1; [2] "Practitioner," Oct., Nov., Dec., 1899; [3] "Lancet," Aug. 4, 1900; [4] "Archiv. für Experiment. Pathol und Pharmakol.," Band xxv, 1889; [5] Ibid., Band, xxix, 1892; [6] "Practitioner," Oct., 1899; [7] "Lancet," Sept. 2, 1899; [8] "Revue de Therap., Medico Chirurg.," Aug. 15, 1899: "Treatment," Nov. 9, 1899; [9] "L'Echo Méd. du Nord," Jan. 1, 1899; "Treatment," March 9, 1899; [10] "Lancet," Aug. 4, 1900; [11] "Medical Annual," 1897, p. 14; [12] Ibid, 1898, p. 8: [13] "Med. Press and Circ.," Aug. 29, 1900: [14] "Dominion Med. Journ.," Oct., 1899: "New York Med. Journ.," Feb. 4, 1899.

ACOIN.

Randolph[1] finds that in solutions of 1 in 100 and 1 in 300 this drug produces satisfactory **Anæsthesia** in an unirritated eye in about the same length of time as cocaine; when there was much congestion it failed. It has a more stinging effect when first instilled than cocaine. It does not damage the corneal epithelium, and has no effect on accommodation, the size of the pupil, or on tension. It prevents the growth of staphylococcus pyogenes albus.

The author has removed foreign bodies and a pterygium under its influence, and has opened tarsal cysts.

Acoin is a white powder, fairly soluble in water; it is derived from guanin, and related to caffeine and theobromine.

The drug was introduced into practice by Trolldenier,[2] who regards it as a satisfactory local anæsthetic.

REFERENCES.—[1] "Ophth. Rec.," Aug., 1899; "Brit. Med. Jour.," Nov. 4, 1899; [2] "Therap. Monat.," Jan., 1899.

ADONIDIN.

This is the active principle—probably a glucoside—obtained from the *Adonis vernalis*, a digitalis remedy. Heinrich Stern[1] states that it may be safely administered in pathological conditions where digitalis, if given at all, should be administered only with the utmost caution. This refers to **Fatty Degeneration of the Heart, Pericarditis, Simple Hypertrophy, Compensatory Hypertrophy,** and certain **Atheromatous Conditions.** In rapidity of action adonidin almost equals nitroglycerin. In this respect it surpasses by far other heart remedies, as digitalis, digitalin, digitoxin, caffeine, spartein, strophanthus, convallaria, and convallamarin. In certainty of action it equals nitroglycerin and surpasses caffeine, spartein, convallamarin, strophanthus, and digitalis or its glucosides. In permanency of action, although no cumulative effects were ever noted, it surpasses nitro-glycerin, caffeine, convallamarin, spartein, digitalis, digitalin, and digitoxin. Its diuretic action in health is limited. As a physiological diuretic it is inferior to caffeine, strophanthus, convallamarin, and spartein. In certain affections of the kidney and in pyretic conditions its diuretic action is more pronounced, probably as the result of increased arterial tension. Its greatest diuretic effect is exhibited in conditions accompanied by dropsy and low arterial tension. In the healthy individual it causes a slight increase of temperature, but it tends to lower the body-heat in pyretic conditions. The dose varies from $\frac{1}{30}$ to $\frac{1}{10}$ of a grain two or three times a day ; $\frac{1}{6}$ of a grain administered in any form influences the œdematous condition and produces diuresis, especially when the arterial tension is low.

The action of adonidin on the kidney was worked out some years ago by C. D. F. Phillips[2] and J. R. Bradford.

REFERENCES.—[1] "Merck's Archives," 1900, No. 5 ; "Amer. Jour. Med.," July, 1900 ; [2] "Action of Certain Drugs on the Circulation and Secretion of the Kidney.'

ANEMONIN.

Anemonin[1] is the active principle of several species of anemone, and has been isolated from the wood anemone. It is recommended as an **Anticatarrhal, Antibronchitic,** and **Antitussic.** It is also an **Emmenagogue.** Its use has, however, been restricted, probably owing to the dangers it presents when used in a large dose and to the precautions which its use necessitates. Anemonin consists of small, acicular, whitish-gray, inodorous crystals, slightly soluble in water, more so in ether, and especially in alcohol and chloroform. The dose is from $\frac{3}{4}$ of a grain to $1\frac{1}{2}$ grains in the twenty-four hours.

REFERENCES.—[1] "Jour. de Méd. de Paris," Sept. 24, 1899 ; "New York Med. Jour.," Feb. 24, 1900.

ANESON.

This is a cocaine substitute. It is a watery solution of trichlor-pseudobutyl alcohol, or acetone chloroform, which in the past has not been utilised on account of its insolubility in water. This difficulty has been overcome, and 1 or 2 per cent. solutions equal in anæsthetic power about 2 per cent. solutions of cocaine. The preparation is kept in wide-mouthed vials, each holding about 2 drachms, into which the hypodermic syringe may be readily introduced. The solution is permanent.

Masbachen[1] finds that its advantages are: (1,) It acts even in severely inflamed tissues; (2,) In point of harmlessness it is superior to all remedies for **Local Anæsthesia**; (3,) The secondary pains of infiltration anæsthesia are not observed when this remedy has been employed.

REFERENCE.—[1] "Münch. Med. Woch," No. 3, S. 81, 1899.

ANTISTREPTOCOCCIC SERUM. (See also "Toxins and Antitoxins.")

There can be no doubt that sero-therapy is destined to hold an important place in the treatment of those diseases which owe their origin to micro-organisms, but at present many of the antitoxins are on their trial both as regards curative and prophylactic measures.

The first attempt to cure streptococcic infection by the use of serum was made by Marmorek in 1895. His first series of sixteen cases of **Puerperal Infection** contained seven cases of pure streptococcic infection, and all recovered after the use of the serum.

Since this time many reports have been published, and it has proved of the greatest possible value in **Erysipelas** ("Medical Annual," 1900, p. 43). The results in puerperal infections are far less satisfactory.

A Committee of the American Gynæcological Society[1] reports as follows:—

(1,) A study of the literature shows that three hundred and fifty-two cases of puerperal infection have been treated by many observers with a mortality of 20·24 per cent. In cases where streptococci were positively demonstrated the mortality was 33 per cent.

(2,) Marmorek's claims that his anti-streptococcic serum will cure streptococcic puerperal infection does not appear to be substantiated.

(3,) Experimental work casts grave doubts upon the efficiency of anti-streptococcic serum in clinical work, by showing that a serum which is obtained from a given streptococcus may protect an animal from that organism, but may be absolutely inefficient against another streptococcus, and that the number of serums which may be prepared

is limited only by the number of varieties of streptococci which may exist. Van de Velde, to overcome this difficulty, suggests that a serum be prepared from a number of streptococci obtained from different sources. This mixed serum he has called "serum polyvalent." This can, however, not be regarded as satisfactory, as it is impossible to tell in a given case whether any of the serums composing it will be efficient against the particular streptococcus present.

(4,) The only definite result of Marmorek's work is the development of a method by which we can increase the virulence of certain streptococci to an almost inconceivable extent, so that one hundred billionth of a cubic centimetre will kill a rabbit.

(5,) The experience of the Committee has shown that the mortality of streptococcus endometritis, if not interfered with, is less than 5 per cent.

(6,) Curettage and total hysterectomy are to be condemned in streptococcus infections after full term delivery, and a large part of the excessive mortality is due to the former operation.

The report ends with these words : " We find nothing in the clinical or experimental literature or in our own experience to indicate that its employment will materially improve the general results in the treatment of streptococcus puerperal infection."

At meetings of the Obstetrical Society of London and of the Harveian Society[2] of London the subject was fully discussed.

Herman thought that judgment as to the therapeutic value of the serum was difficult because sufficient knowledge of the effects of the streptococcus was not yet forthcoming.

J. W. Washbourn stated that as the results of his experience the serum was of extreme value in certain cases, but that it was valueless in other cases apparently identical. This he attributed to their causation by different varieties of streptococci and he urged the desirability of using a second sample of serum from a different source if the first failed.

G. Dean insisted on the varying virulence of apparently similar streptococci, and stated that an attempt was now being made to prepare a polyvirulent serum by using streptococci obtained from different sources.

With regard to the value of the antistreptococcic serum, in these cases it must be admitted that no definite answer can at present be given, although the indications for its use are not unfavourable. The main difficulty is in the variety of streptococci which have been shown to exist, the antitoxin of one not proving antagonistic to the attacks of others. Further investigation is necessary as to the micro-organisms

which are present in the forms of disease now included under the term "septicæmia." A large number of cases will have to be investigated before any definite opinion can be arrived at, and then it will remain to be proved whether it will be possible by bacteriological examination in any individual case to ascertain definitely which form of streptococcus is present and if so whether the antitoxin of that particular variety can be isolated for clinical purposes.

Alex. J. Anderson[3] speaks favourably of the serum in **Puerperal Septicæmia** and **Erysipelas,** and H. W. Webber[4] publishes a case of the former disease in which a marked fall in temperature followed a single injection. Mitchell Bruce[5] publishes two cases, one of **Septic Endocarditis** and one of **Septicæmia of Cerebro-Spinal Type** in which the use of anti-streptococcus serum was completely successful.

REFERENCES.—[1] "Amer. Jour. of Obstet.," Sept., 1899: [2] "Lancet," Nov. 18, 1899; [3] "Brit. Med. Jour.," Feb. 17, 1900; [4] Ibid., July 8, 1899; [5] Ibid., July 8, 1899.

ANTITOXIN (Diphtheria). (See also "Toxins and Antitoxins.")

The Clinical Society of London[1] publishes a report based on six hundred and thirty-three consecutive and not specially selected cases of **Diphtheria** treated with this antitoxin.

Of the six hundred and thirty-three cases, one hundred and twenty-four were fatal—19·5 per cent.; excluding fifteen cases dying within twenty-four hours, the mortality was 15·6 per cent.

Of four hundred and forty-eight unselected cases not treated with antitoxin one hundred and fifty were fatal—33·4 per cent.

When the larynx was affected the mortality in the antitoxin series was 23·6 per cent., and in the non-antitoxin series 66·6 per cent.

The report states that the diminished mortality after tracheotomy affords the most direct proof of the value of the remedy.

It is necessary to inject the serum early, as a steady rise in mortality is observable with each postponement of the day of injection during the first five days.

When the treatment is resorted to during the first three days, in cases needing tracheotomy, the mortality is 16·1 per cent.

Of the untoward consequences following the injection of the antitoxin, the report states that in 34·7 per cent. a rash was noticed, generally either a simple erythema, or urticaria, and in the majority of these cases accompanied by pyrexia. Occasionally pyrexia was observed without other signs. The rash usually appeared on the eighth day, being seldom seen before the sixth and rarely after the eighteenth day.

The appearance of the rash had no relation to the amount of antitoxin injected.

In forty of the cases there was pain in or about the joints, and a marked increase in the frequency of the supervention of these pains was seen in those which received the largest doses.

Jefferis Turner[2] records his experience of the treatment of diphtheria in the Children's Hospital, Brisbane, and compares the results obtained since the injection of antitoxin was begun in that institution, with those observed in the same hospital in the pre-antitoxin period, from July, 1889, to January, 1895.

As regards laryngeal cases, in the author's experience an average mortality of 59·2 per cent. for the pre-antitoxin period has been reduced to an average mortality of 18·6 per cent. since the use of antitoxin. During the same periods, whereas formerly only 8·4 per cent. of the laryngeal cases recovered without operation, since the introduction of antitoxin an average of 38·4 per cent. have recovered without operation.

As regards operation cases alone, whether intubation or tracheotomy, or both, the average mortality of 65·7 per cent. for the pre-antitoxin period, has been reduced to an average of 28·4 per cent. for the antitoxin period.

The author states that in the five years that have elapsed since the introduction of the use of antitoxin, "the diminution in the hospital mortality of diphtheria has been nothing short of marvellous to all but the few who had made themselves acquainted with the thorough and unimpeachable experimental basis on which the new treatment had been based. He emphasises the importance of its early administration, and concludes that, with certain necessary qualifications such as the occasional difficulty of diagnosis during the early stages, "no child ought to die of diphtheria."

John H. Musser[3] recommends the employment of diphtheria antitoxin in small and frequently repeated doses, especially in the case of children. For children below eight years of age he gives 500 units, repeating it at intervals of six hours. For children over eight years old he gives 1,000 units and repeats it at intervals of from eight to twelve hours. He claims to have obtained good results and states that in a series of eighteen cases treated by this method there was but one case of erythema and albuminuria and not a single instance of joint affection.

Edwin Rosenthal,[4] of Philadelphia, has taken much pains in obtaining statistical information respecting the mortality records in cases of diphtheria, and with this end has laid under contribution

every American city having an organised bureau of health. One hundred and fifty-seven cities responded to this appeal and a summary of the results gives the following figures :—

Number of cases previous to the serum period, 183,256—with a mortality of 38·4 per cent.

Number of cases since the antitoxin period, 132,548—with a mortality of 14·6 per cent.

The latter were not all treated with serum ; in computing those cases treated with the serum alone the mortality was 9·8 per cent.

REFERENCES.—[1] "Trans. Clin. Soc. of London," 1898 ; "Med. Chron.," April, 1899 ; [2] "Intercolonial Med. Jour. of Australasia," Dec. 20, 1899 ; [3] "University Med. Mag.," Philadelphia, March, 1900 ; [4] "Med. Press." Sept. 19, 1900.

ANTIVENENE.

A full account of Fraser's Antivenene will be found in the "Medical Annual," 1897, p. 67. Calmette's Antivenene Serum is described in the "Medical Annual," 1898, p. 494.

Myers[1] objects to the method by which Calmette standardises the antivenemous serum on the ground of inaccuracy. Calmette's method is as follows : Rabbits of about 2,000 grammes in weight are employed, and the test dose of a mixture of venoms is ascertained. It may be mentioned in passing that this mixture is heated to 73° C. for half-an-hour before use. The test dose chosen is that amount of the mixture which kills the animal in from fifteen to twenty minutes when injected intravenously. The amount of serum which will prevent death when injected five minutes before the venom is then determined. This amount of serum is said to contain 2,000 units of immunity.

The author thinks it would be better to make the estimation, as suggested by Semple and Lamb,[2] with a carefully-calculated minimal fatal dose and express the strength of the serum in terms of neutralising power, not in terms of preventive power.

It was found that Calmette's test dose was three times the minimal fatal dose. Myers recommends using mice or guinea-pigs for the test, and using ten times the minimal fatal dose in order to eliminate the error resulting from the size of the non-fatal dose. With mice of 15 grammes weight, Myers found it possible to determine the minimal fatal dose within 20 per cent. This dose of unheated cobra venom was found to be 0·012 mg., and to kill in from three to four hours. To make a test, ten times this dose, or 0·12 mg. and the amount of serum required to neutralise it were mixed *in vitro* and allowed to stand at room temperature for half-an-hour, then injected. The neutralisation

of the ten times minimal dose could be calculated to within 15 per cent.

The author suggests that a unit shall be that quantity of antitoxin which neutralises ten times the minimal lethal dose of cobra poison for a mouse weighing 15 grammes. A serum, for example, of which 0·2 c.c. were required to neutralise the test dose would contain 5 units. Myers thinks the estimation would be still more accurate if one hundred instead of ten times the minimal fatal dose could be employed for the test dose, but the strength of the serum now obtained does not permit it.

R. H. Elliot [3] has found that the action of bile alone is not the only destructive agency with which venom meets in the alimentary canal. Venom is absorbed through the walls of the small intestine, but not so readily as from the subcutaneous tissues. The bile he found to be antidotal, as Fraser has shown. Trypsin has the same power of destroying cobra venom as has bile. Venom subjected to pancreatic digestion is harmless in most cases. Rectal injections of venom produce no effect. Rabbits fed upon venom were deleteriously affected, the ultimate effect of such feeding probably being the development of immunity. In the meantime, however, vital resistance is lessened.

REFERENCES.—[1] "Lancet," May 19, 1900; [2] "Brit. Med. Jour.," April 1, 1899; [3] Ibid., May 12, 1900.

ASPARAGUS.

The root of *Asparagus officinalis* has long been known to possess aphrodisiac and emmenagogue properties, and a tincture (℥v of the dried tops to 2 pints of proof spirit) has been used as a **Diuretic.** The dose is ℥ss–℥j. John V. Shoemaker [1] finds that a better preparation can be made by crushing and straining five pounds of the fresh tops, evaporating the juice to 1 pint and adding an equal quantity of rectified spirit. The active principle of asparagus is asparagin, the dose of which is 2–3 grains.

H. A. Hare [2] has recently investigated the action of asparagus as a diuretic. He employs a fluid extract made from the root-stalks, and also a preparation made from the tops. He relates a case of a man, aged thirty-five, who was suffering from cirrhosis of the liver, with swelling of the ankles and legs. There was albuminuria, but no sugar. The urine was found to vary from 35 to 48 ounces during a period of fifteen days. On the sixteenth day the fluid extract of asparagus (root stalk) was administered in drachm doses, three times a day. In the next twenty-four hours the urine rose from 39 to 62 ounces, and five days later reached 70 ounces, varying from 55 to 65 ounces for the next twelve days. The drug was stopped, when the

quantity of urine fell to between 39 and 45 ounces in the twenty-four hours. After a lapse of nine days, the asparagus was given a second time, with a rise to 63 ounces. For a month the drug was continued, the urine remaining between 50 and 63 ounces per day. On again ceasing the drug, the quantity fell in four days to 40 ounces. Under the treatment the dropsical symptoms disappeared.

REFERENCES.—[1] "Materia Medica and Therapeutics," 3rd Ed., *Art.* Asparagus; [2] "Therap. Gaz.," Sept. 15, 1899.

AURUM.

Many attempts have been made to introduce gold as a therapeutic agent. It has been used with success in the treatment of **Epilepsy,** chronic diseases of the nervous system, such as **Locomotor Ataxy,** and especially **Impotency.**

Brewer and Habhegger[1] have made a series of observations which confirm the former author's experience that the chloride of gold and sodium has the power of increasing the percentage of hæmoglobin and the number of red blood corpuscles, and of stimulating renal elimination.

Brewer advised its use in secondary anæmia, chronic interstitial inflammations, and syphilis in debilitated subjects.

Brewer and Hebhegger have obtained good results in four cases of **Chlorosis,** there being slight improvement in the blood record, and some increase in elimination. Seven cases of **Secondary Anæmia,** after syphilis, fever, etc., showed good results in hæmogenesis. One patient was a barman, aged thirty-eight, very anæmic, languid, and subject to diarrhœa after syphilis. He complained of neuralgia in the extremities and palpitations; pernicious anæmia was suspected. Arsenic, iron, and cathartics proved of moderate benefit. He was then put on chloride of gold and sodium in solution, at first in doses of $\frac{1}{20}$ gr., the dose being increased in a fortnight to $\frac{1}{10}$ gr. A speedy improvement in the general health and condition of the blood followed, the red cells increased five-and-a-half times in number, the hæmoglobin from 16 to 60 per cent., the total urinary solids and urea being likewise augmented. The drug was found to be of little benefit in cases of secondary anæmia due to chronic nephritis, in discharging empyema, and in chronic tuberculosis.

REFERENCE.—[1] "Jour. Amer. Med. Assoc.," Nov. 25, 1899.

CACODYLATE OF SODIUM.

Arsenic forms a series of compounds with alcohol radicles—one of these is arsendimethyl or cacodyl. From cacodyl is formed cacodylic acid, which with its sodium salt has recently been introduced as a

therapeutic agent. Cacodylate of sodium is an organic combination of arsenic containing 55 per cent. of arsenious acid. It may be given by mouth or subcutaneously.

Prof. Armand Gautier,[1] at a meeting of the Academy of Medicine of Paris, held on October 31st, 1899, read a paper on the administration of cacodyl. If given by the mouth or by rectal injection it induces at the end of a few days various forms of intolerance, such as feeling of weight and cramp in the epigastrium, intestinal disorders, and a very fœtid breath, accompanied by an odour of garlic. Slight albuminuria is also observed after the prolonged use of preparations of cacodyl in healthy subjects, and still more so in those in whom the kidney does not act quite normally. The author attributed these accidents to impurities which existed in the commercial cacodyl, and, above all, to incomplete reduction of cacodylic acid which is absorbed by the digestive tract. The odour of the breath is due to cacodylic oxide, and this is a poisonous substance which explains the existence of the distinctive digestive troubles and the transitory albuminuria. Cacodylic acid ought to be given in as pure a state as possible—that is to say, it should be quite colourless, almost odourless, and almost tasteless; it should give no precipitate with lime-water mixed with baryta-water, and it should not give a precipitate with nitrate of silver or a solution of sal-ammoniac in sulphate of magnesium. The best way of administration was to give it hypodermically, and M. Gauthier recommended the following formula: Pure cacodylate of sodium, 6·40 grammes; carbolised alcohol 10 drops; and distilled water 100 drachms. This mixture should be boiled for a few moments and then made up to 100 drachms with distilled water and put into a sterilised flask. Each cubic centimetre of this mixture contained 5 centigrammes of cacodylic acid, which was a dose to be given at one time every twenty-four hours. This quantity caused no inconvenience provided the patient were allowed an interval of eight or ten days after having had an injection daily for eight or ten days previously. The drug should not be given in cases where there was hæmorrhage or hæmoptysis, or in the case of women during the monthly period.

At a meeting of the Society of Hospital Physicians of Paris,[2] held on March 2nd, there was a further discussion on cacodylic acid and cacodylate of sodium.

M. Dalché stated that even when given as a pill the drug had produced no ill effects in patients except that their breath acquired a slight odour of garlic, neither had he ever noticed the occurrence of diarrhœa nor any uneasy feelings in the stomach. In two cases where the drug was given by injection one patient complained of pain. M.

Dalché's patients were almost all tuberculous. Three were undeniably cured, in four their condition improved to a marked extent, especially as regards the way in which they put on weight, acquired more muscular force, and manifested greater renal activity. Two cases showed no particular results and two got worse, but they were patients far advanced in tuberculosis. Two patients who showed no signs of pulmonary tuberculosis, but were suffering respectively from Addison's disease and cancer of the stomach derived no benefit from the treatment.

Hayem preferred to give the drug by hypodermic injection rather than by the mouth, which was apt to produce gastric intolerance, or by the rectum, which method often gave rise to severe lumbar pains.

Rénaut[3] calls attention to the value of the rectal method of administering arsenic: 2 to 4 grammes of Fowler's solution is diluted with 56 grs. of distilled water. Of this, 5 c.cm. can be injected into the rectum three times a day, and in this way the patient receives and absorbs daily about $\frac{1}{7}$ gr. of arsenious acid, a dose which would not be tolerated by the stomach, and the treatment can be continued for months if certain precautions are observed. As the injections occasionally set up diarrhœa, it is well to add a few drops of laudanum to the solution.

Cacodylate of sodium has the formula $As(CH_3)_2O_2Na$, cacodylic acid being derived from dimethyl-arsenic or cacodyl ($As_2(CH_3)_4$) by oxidation. It contains 46·87 per cent. of metallic arsenic, is very soluble in water and very stable, so that its solutions can be sterilised by boiling. As it is absolutely unirritating, it is very convenient for hypodermic injections, which can be given safely in doses of 0·050 to 0·075 mg. a day, and are no more painful than those of plain water.

An important action of arsenic is to fix on the tissues of the nervous system, which in consequence become less irritable, and to diminish the tissue waste produced by nervous over-stimulation. Hence its value, not only in **Neurasthenia** and **Chronic Chorea,** but in **Tuberculosis, Diabetes Mellitus, Graves's Disease, Cancer of the Stomach,** and **Leucocythæmia.**

(1,) Tuberculosis.—Rectal injections of sodium cacodylate combined with fresh air, full diet, and rest, give splendid results in the so-called pre-tuberculous stage, characterised by excessive processes of oxidation; in declared phthisis they have no specific action, but with hygienic measures give probably better results than any other treatment.

(2,) In diabetes mellitus arsenic acts probably directly on the fourth ventricle, as it has been proved that an animal which has received a

strong injection of arsenic becomes, if at all, very slightly diabetic if the diabetic puncture is performed; clinically the cacodylate injections, even more than those of Fowler's solution, reduced the sugar, even in advanced cases, to a surprising degree.

(3,) In exophthalmic goître good results were obtained.

(4,) In cancer of the stomach, combined with treatment of the dyspepsia, cacodylate injections arrested for a time the emaciation and the feeling of weakness.

(5,) In leucocythæmia the treatment had a remarkable effect. In one advanced case with enormous spleen and albuminuria, with only 600,000 red corpuscles in a cubic millimetre, and a proportion of white corpuscles to red of 1 to 4, treatment with arsenical injections from November 30th to April 10th raised the red corpuscles to 3,200,000 per cubic millimetre, and altered the proportion of leucocytes to 1 to 18. The spleen was steadily diminishing, the strength returning, and on May 16th the man resumed his employment.

The treatment is also recommended for severe **Anæmia.**

REFERENCES.—[1] "Lancet," Nov. 18, 1899; [2] Ibid., March 10, 1900; [3] "Bull. de l'Acad. de méd.," No. 22, 1899; "Brit. Med. Jour.," Oct. 1, 1899; "Med. Press," Feb. 14, 1900; "Med. Chron.," May, 1900.

CHLORETONE.

E. M. Houghton and T. B. Aldrich[1] report upon this remedy, which is formed when caustic potash is added to equal weights of chloroform and acetone, and this may be isolated from the mixture, after the removal of any excess of acetone and chloroform, by distilling with steam. It occurs as a white, crystalline compound, having a camphoraceous odour. It is soluble in chloroform, acetone, strong alcohol, ether, benzine, and glacial acetic acid; sparingly (to 1 per cent.) in cold water, more soluble in boiling water. If the crystals or tablets containing the substance or solutions of it are administered to animals, or air saturated with its vapours is inhaled by them, all degrees of hypnosis to complete anæsthesia may be produced, of a duration depending upon the amount of the substance absorbed. If the amount administered is not excessive, the animal makes an excellent recovery. After an extremely large amount the animal remains insensible for several days, the respiration becoming progressively slower and weaker until death supervenes. Administered by the stomach, this substance passes quickly into the circulation, and is distributed through the body. It produces no spectroscopic changes in the blood. The pulse-rate is slightly lessened, but the action of the heart remains excellent until the organism begins to suffer from a lack of oxygen. Kymographic tracings taken from the carotid artery

of dogs show that the blood-pressure usually remains unaffected. The main action of the drug is confined to the central nervous system, it being essentially the same as that of the other anæsthetics and hypnotics of the fatty acid series, differing from most of the members of this group in that it does not depress the circulatory system. Beside its central action it possesses local anæsthetic properties in a marked degree, resembling cocaine in many respects. Blood-serum and other organic fluids are preserved for an indefinite time if saturated (a little more than one-half of 1 per cent.) with this substance. Culture experiments with various kinds of bacteria prove that it possesses considerable antiseptic power. As chloretone is volatile at ordinary temperatures and circulates in the blood, one would expect it to be eliminated by the lungs; but it has not been found in the expired air, nor has its presence been demonstrated in the urine. It is probably decomposed in the body. It has been found to lessen the pain of lacerated wounds when freely applied in aqueous solution. **Pain** and uncontrollable **Vomiting of Gastric Origin** are quickly relieved by its internal administration. **Gastric Cancer, Sea-sickness,** and the **Vomiting of Pregnancy** would seem to be promising opportunities for its use. Laboratory experiments show that it renders the mucous membrane of the alimentary canal insensible to irritants. As a hypnotic it should be chosen in the persistent **Insomnia of the Aged,** and **Cardiac Diseases,** with renal complications, accompanied by high arterial tension. The dose varies from 6 to 20 grains as a single dose, followed by a draught of milk or water: as much as 60 grains have been given at one time without producing untoward effects. Possibly the drug might prove useful as a general anæsthetic if administered in large doses; or it may be given before chloroform or ether, so as to allow complete anæsthesia to be produced by the use of a minimum of the usual anæsthetic.

REFERENCES.—[1] "Jour. Amer. Med. Assoc.," 1899, vol. xxxiii, p. 777; "Amer. Jour. of Med. Sci.," Dec., 1899.

DIGITALIS.

Lauder Brunton,[1] in a communication on the physiological and therapeutic action of this drug and its active principles, points out that the chemical composition of digitalis is complex, and that a good deal of the discordant results obtained by different observers are not only due to differences in the animals upon which they have experimented, but to differences in the physiological action of the preparations they have employed, even when these preparations have borne the same name.

According to Schmiedeberg, the chief components of digitalis are

digitoxin, digitalin, digitalein, digitonin, and digitin. Digitin has little or no physiological action, and digitonin but little, so at present both may be dismissed from consideration. The crystallised digitalin of Nativelle consists chiefly of digitoxin, the digitalin of Homolle and Quevenne consists chiefly of digitalin, and German digitalin consists chiefly of digitalein and digitonin. The action of these drugs appears to be nearly alike in kind but different in degree, digitoxin being by far the strongest. Nativelle's digitalin, which consists chiefly of digitoxin, was found by Widal to be eight or ten times stronger than amorphous digitalin. Nativelle's digitalin in daily doses of 1 to 2 milligrammes slows the pulse, while 3 to 10 milligrammes of Homolle's digitalin are required for this purpose. The German digitalein may be given in doses three times as great as Homolle's digitalin, or ten times as great as that of Nativelle's. The insoluble kinds of digitalin—Nativelle's and Homolle's—cause considerable local irritation when used subcutaneously, and may lead to the formation of abscess, although the solutions are perfectly sterile. Soluble digitalin may be used subcutaneously in the form of 1 per cent. solution dissolved in equal parts of glycerin and water; 1 to 2 cubic centimetres of this solution may be injected twice or three times a day.

Henry P. Loomis,[2] of New York, advocates the revival of the old method of treating **Acute Alcoholism** with ½-ounce doses of tincture of digitalis. His practice is to give this dose every four hours till three doses have been taken. If the patient becomes quiet and the delirium disappears, the remedy is stopped before the third dose. If not, another series of three doses six hours apart is ordered. In the cases that showed the best results not more than three doses were necessary. The guide to the repetition of the dose is its narcotic effect. No marked dropping of the pulse was noted in any of the cases, but in the successful ones the pulse increased in force and became stronger, fuller, and more regular after the first dose. The cold, clammy perspiration disappeared, the skin became warmer, and the patient went to sleep.

It is admitted that the treatment is not uniformly successful, and two out of his ten cases died.

Jordon Paterson,[3] of Ascot, speaks highly of the method, and says that usually the patient, within half-an hour, falls into a deep sleep. The treatment is very old, and was originated by Jones, of Jersey.

J. A. MacLaren,[4] in an article on the Comparative Action of Digitalis, Strophanthus, and other Diuretics, states that digitalis is *the* drug, *par excellence*, in **Cardiac Dropsy,** and its toxic properties have

been greatly over-estimated. He finds that it is far better borne than strophanthus, which is more uncertain in action, and causes more gastro-intestinal disturbance. There is little danger in prescribing digitalis in aortic disease with anasarca, if the patient can be kept under observation. Digitalis is a far more powerful drug, causing a greater elimination of both solids and fluids than either strophanthus or diuretin. Nativelle's granules, 1 three times a day, or tincture of digitalis, ♏xv every four hours, give the most beneficial results. Strophanthus may be used as a change to the digitalis, but the author recommends diuretin to be used only when both digitalis and strophanthus have failed. In the **Anasarca of Bright's Disease,** diuretin acts more favourably than either digitalis or strophanthus.

J. Groedel[5] finds that digitalis does not lose its effect by continued use. As regards the cases in which digitalis may be used there is no indication that any one entire class of valvular disease, *e.g.*, aortic incompetence, should be excepted. When no contra-indications are present, as for example, great tension of the blood-vessels, or an individual repugnance to the remedy, a trial will soon prove whether continuous digitalis treatment can be used or not. Digitalis in continuous small doses is useful in the treatment of heart diseases the result of over-exertion, and in slight fatty degeneration of the muscle resulting from alcohol or tobacco.

Thomson[6] says that the diuretic action of digitalis in chronic heart disease is greatly aided by the concomitant use of small doses of nitro-glycerin. When neither digitalis nor strophanthus is well borne, a prepared pill may be given according to the following formula :—

℞ Spartein Sulph.	gr. j	Caffeine Citrate	grs. ijss
Powdered Squills	gr. ss	Strychnine	gr. $\frac{1}{30}$

REFERENCES.—[1] "Med. Press and Circ.," Aug. 15, 1900; "Lancet," Aug. 18, 1900; [2] "Jour. Amer. Med. Assoc.," Aug. 11, 1900; [3] "Lancet," Sept. 22 & 29, 1900; [4] "Med. Chron.," Sept., 1900; [5] "Practitioner," April, 1900; "Med. Chron.," Aug, 1900; [6] "New York Med. Rec.," March 17, 1900.

DIONIN.

This is the hydrochlorate of æthylmorphine. It is a white crystalline body, which has a bitter taste and is readily soluble in water and alcohol.

Korte[1] finds that it is a milder narcotic than morphine, and is more powerful than codeine. He has found it useful in the irritable **Cough of Phthisis** and **Bronchitis.** A dose at bedtime gives great relief, and generally secures a good night's rest. **Bronchial Asthma** is relieved by the drug.

Dionin can be substituted for morphine, and is in many ways perferable. It does not disturb the digestion nor cause headache in the morning.

Dionin loosens the expectoration very markedly. In the treatment of pain it is not nearly so reliable as morphine. It has a local effect when injected subcutaneously. The chief value of dionin is in the treatment of irritable cough, especially in phthisis. The troublesome **Night Sweats** in tuberculous patients are relieved by the drug.

It can be given either in solution or in syrup, as follows :—

℞ Dionin 0·3 | Aq. Destil. 20·0

Sig.—15 drops to be given three times a day in water.

℞ Dionin 0·5 | Syrup. Simplicis 100·0

Sig.—1 teaspoonful to be given at bedtime.

H. Higier, of Warsaw,[2] employed it in forty-nine various cases with a view to testing its efficiency as a sedative. He used it almost exclusively in chronic severe cases in which the cough was exceedingly troublesome, both night and day, and when the usual narcotics had been ineffectively employed. With the exception of two cases of bronchial asthma, the cases treated were advanced **Tuberculosis of the Lungs**, with or without affected larynx or pleura, the remainder being **Chronic Cases of Bronchitis** with **Pulmonary Emphysema.**

In almost every case of pulmonary tuberculosis the excellent action of the dionin was recognised. It afforded quiet, prolonged sleep, suspended the troublesome cough, diminished the dyspnœa, and rendered expectoration easier.

The most remarkable effects were observed in the very annoying cough accompanying laryngeal or pulmonary phthisis.

The action of dionin was less marked in emphysema.

No good results whatever were obtained in bronchial asthma.

In three cases changes were made thrice from dionin to morphine, codeine, and heroin, but in every case the patient believed the most benefit to be derived from dionin, though no suggestion as to the changes had been made.

Dionin was given in doses of $\frac{1}{4}$ grain three times a day, in solution, syrup, powder, or pill.

REFERENCES.—[1] "Therap. Monat.," Jan., 1899; [2] "Therap. Beit. d Deut. Med. Woch.," xxv., 75; "Treatment," April, 1900.

GARLIC.

Many attempts have been made to introduce the common garlic, *Allium sativum*, as a remedy for **Phthisis,** but its powerful odour has proved a bar to its general use.

Cavazzani[1] has employed it for the last two years in the treatment of pulmonary tuberculosis in the Civil hospital at Venice, and in private practice. It may be given in the crude state or prepared. From 4 to 6 grammes in a moderate state of dessication may be administered daily. It should be given in divided doses, and in such a form as to remove the only possible cause of intolerance—namely, the taste. He continues the administration for a long time, but marked improvement in cases amenable to the treatment are manifested within the first month, sometimes within a few days. His own experience extends to more than one hundred cases, and, with the data supplied to him by others, his material amounts to more than two hundred cases. Among them were examples of all stages of the disease. Excluding some very advanced cases, all were improved by the garlic. In some the amelioration was so marked as to induce hope of a cure, every morbid symptom recognisable by the most careful examination having disappeared. Incipient cases are the most favourable, but excellent results were frequently obtained even in cases presenting well-marked symptoms of the second stage. In all cases the clinical diagnosis was confirmed by the bacteriological examination of the sputum. The improvement begins with a diminution, both in frequency and in quantity, of the cough and expectoration within the first days of the treatment; often the sputum from mucopurulent becomes purely mucous on the second or third day, probably by the antiseptic action of the volatile oils in the garlic. In favourable cases expectoration ceases altogether after a time. The physical signs are modified with greater or less rapidity, according to the more or less advanced stage of the disease and the extent of the morbid process. The temperature often becomes normal, night sweats cease, and the appetite almost invariably improves; weight is gained and sleep becomes regular. Hæmoptysis ceased without the use of any other remedy. The author has not found the garlic cause any disturbance of digestion.

REFERENCES.—[1] "Suppl. al. Policlin.," April 7, 1900; "Brit. Med. Jour.," June 30, 1900.

GLYCEROPHOSPHATE OF SODIUM.

T. Harris,[1] in a communication to the Manchester Therapeutical Society on the use of glycerophosphate of sodium, said he had employed it largely during the last four years, and although unable to bear out all that had been said by others in its favour, he believed it had considerable value in certain conditions. From their chemical constitution and their relation to lecithin, there seemed a probability on *a priori* grounds of the glycerophosphates acting as foods to the

nervous system. In 1894 Professor Robin published his observations on the physiological action and therapeutic uses of the glycerophosphates. He considered that they favoured assimilation and metabolism, especially acting on the sulphur metabolism, and exerting a sparing influence on the combined phosphates. It was impossible to believe that the glycerophosphates could be useful in all the large number of diseases in which beneficial result had been claimed, but such diseases as **Neurasthenia** and **Addison's Disease** seemed likely to be favourably influenced by them. The author had used only the glycerophosphate of sodium, and not the other compounds This could be obtained either as 75 per cent. solution, which was jelly-like, or a 50 per cent. solution, which was liquid. The dose was 15 to 40 minims three times daily of the weaker solution. Given in a mixture with tincture of orange and chloroform water it was palatable. He had used the drug chiefly in nervous affections, neurasthenia and hysteria, and functional affections. In most cases of neurasthenia it had failed, but some cases had been benefited by it. Very few cases of true hysteria had been favourably influenced. The best results had been obtained in the treatment of nervous exhaustion from overwork, in which it has often had really good effects.

Wild has used glycerophosphate of sodium on himself and others for weakness following influenza and for nervous exhaustion from overwork, with apparently distinct advantage. It seems to him that the calcium salt might be even more beneficial than the sodium salt.

Dreschfield has used glycerophosphate of sodium for nine months. It failed in some cases of neurasthenia, and it failed to relieve the pains of locomotor ataxy. It seems to do good in some functional diseases.

REFERENCE.—[1] "Brit. Med. Jour.," Dec. 16, 1899.

GUAIAMAR.

This substance is a derivative of phenol. G. F. Butler[1] speaks well of it.

Guaiamar is the glycerol-ether of guaiacol, and is formed by the action of anhydrous glycerin on guaiacol. It is a dry, white, crystalline powder, with a bitter aromatic taste, and is soluble in about 20 parts of water. It dissolves freely in alcohol, and is neutral in reaction. It is antiseptic owing to the liberation of nascent guaiacol, which takes place partly in the stomach, but chiefly in the small intestine, glycerin being set free at the same time. This decomposition occurs readily at the site of diseased tissues (ulcers, etc.), and in the healthy stomach there is practically no change. It does not interfere with normal

digestion, while its bitter aromatic qualities give a tonic effect and improve appetite. Like other members of the group, it has a diuretic and diaphoretic action, and is possessed of antipyretic properties. The unbroken skin is capable of absorbing it, and for this purpose an ointment prepared with lanolin is serviceable. In **Digestive Disorders** where gastric fermentation in dilatation of the stomach is met with, it is useful from the ready liberation of guaiacol under these circumstances, so that bacterial development is checked. Peristalsis is also stimulated. The dose is from 3 to 15 grains thrice daily. Patients suffering from **Typhoid Fever** have been treated with it beneficially, and the fever and local symptoms were diminished. Where the drug has been taken for several days the stools become odourless. The ointment of guaiamar with lanolin (2 drachms to the ounce) applied to painful joints in **Acute Rheumatism** diminishes the pain. Its bactericidal and stimulative action have given good results in **Bed-sores**, which improved rapidly under treatment. The application consisted of guaiamar and balsam of Peru (āā 1 drachm) added to 1 ounce of benzoated zinc oxide ointment. In aqueous solution it is non-irritating, and can be applied as a lotion to **Wounds** and **Lacerated Parts.** In the **Summer Diarrhœas of Children** it has proved beneficial, especially in cases due to bacteria, where the intestinal decomposition rapidly subsided and ceased after the use of this drug. Fœtid expectorations (as in **Bronchiectasis** and in the early and middle stages of **Phthisis**) improved under its administration.

REFERENCES.—[1] "New York Med. Jour.," Sept. 23, 1899; "Brit. Med. Jour.," March 10, 1900.

HYDRASTININE.

Ronsse[1] has published a comparative study of the action of the hydrochlorides of hydrastinine and cotarnine ("stypticine"). Chemically, these two bodies are closely allied, cotarnine being methoxyl-hydrastinine. The author finds that (1,) Both drugs are useful as hæmostatics in **Uterine Affections** complicated by hæmorrhage, where contraction of the uterus is indispensable—for example, *post-partum* hæmorrhage. Hydrastinine ought to be preferred, since its action is not only oxytocic, but vasoconstrictor; (2,) Stypticine has a tonic action on the heart which lasts for some time, while hydrastinine is a cardiac stimulant, the effect of which soon passes off. The former is therefore preferable in all chronic uterine disorders depending on vascular disturbances; (3,) On the other hand, hydrastinine acts more rapidly and energetically than stypticine, and may often replace ether and camphor as a stimulant. It should be used in cases of

Acute Anæmia from hæmorrhage, where life may depend on the rapidity of action of the remedies employed.

REFERENCES.—[1] "Arch. internat. de Pharm.," vol. v., Nos. 1 and 2, 1898. A full account of the action of hydrastis and hydrastine is given in the "Med. Ann." 1900, p 31.

IODOFORM SUBSTITUTES. (See also "Orthoform.")

A detailed account of these substances has already[1] appeared, but the following list by Dr. Eugene S. Yonge[2] may be found useful for ready reference.

A.—Iodoform Substances which contain Iodine :—

Iodol heads the list with the largest balance of iodine. It is a brownish-white powder, with a faint thyme-like smell. It is said to be non-toxic and also to act as an astringent when discharges are copious; but, unlike iodoform, its anæsthetic action is weak.

Iodo-Salicylic Acid and *Di-Iodo-Salicylic Acid* are powerful antiseptics which are compounds of iodine and salicylic acid.

Sozoiodol is another substitute which is said to be non-poisonous.

Aristol is odourless, but there its advantage ends, for it is a less active preparation than iodoform.

Europhen is one of the best substitutes for iodoform. Without being devoid of scent, it does not possess a sledge-hammer odour like its congener. It is non-toxic, adheres well to a wound, does not cake, and, owing to its lightness, as compared with iodoform, a given weight will cover a surface five times the area of the latter. The general opinion is that this drug can be used in all cases that are benefited by the application of iodoform. In venereal ulcers it acts well, and in these cases should certainly replace iodoform.

Loretin, according to Schinzinger, of Freiburg, is a drug of some value. It is odourless itself, but quickly removes the offensive smell of all purulent discharges. The remedy is said to be non-toxic, and its antiseptic effect is greatly superior to that of iodoform.

Other iodine-containing substitutes for iodoform are *Aviol*, which is astringent and desiccative: *Di-iodoform*, which possesses the disadvantage of being decomposed by sunlight; *Antiseptol*, *Anozol* (a mixture of iodoform and thymol which is said to be free from the odour of iodoform), and *Iodoformin*. The last named drug must be a species of "white-blackbird," since it is described as an "odourless iodoform." It acts as a stimulant to ulcerated surfaces by the formalin which is liberated from it. *Sanoform* possesses the special advantage of admitting of sterilisation by heat without undergoing decomposition.

B.—Iodoform Substitutes which do not contain Iodine :—

Dermatol, a basic gallate of bismuth, is a non-odorous, non-toxic antiseptic. It causes rapid cicatrisation, and is said to be a quicker microbicide than iodoform (see "Med. Ann.," 1899, p. 30).

Thioform is another bismuth salt which bases its claim to supplant iodoform on its freedom from odour and toxicity, its greater antiseptic strength and its desiccative action. It freely absorbs secretions from wounds without forming a crust ; it has therefore been recommended for eye cases.

Thioresorcin is a compound of sulphur with resorcin, which has been employed as a dusting powder instead of iodoform—the objections of toxicity and mal-odour being absent.

A drug has been introduced within the last two years which is rapidly gaining a position of importance in therapeutics. It possesses the trade name of Orthoform, and it enters into competition with iodoform, not so much as an antiseptic as an anæsthetic (see "Orthoform").

REFERENCES.—[1] "Med. Ann.," 1899, p. 45 ; [2] "Med. Brief," Feb., 1900.

IRON.

Murrell[1] discusses the comparative value of organic and inorganic iron in the treatment of anæmia. He gives details of a case of secondary anæmia treated with organic iron prepared by an ingenious process. Spinach is grown on a ferruginous soil, and from the crop a liquid extract is made. It is a dark-green fluid having a pungent and aromatic taste, probably due to the addition of flavouring agents. It gives chemically the reaction of iron salts, and the iron is said to be present in the form of a malate. The name of the particular preparation is not given, and it was taken simply as a type of organic iron. The patient on whom the observations were made was a woman, aged twenty-nine, who presented every indication of profound anæmia. She was kept in bed, and a few days after admission to the hospital her blood was submitted to examination, with the following results:—Drop pale and watery. Hæmoglobin, 65 per cent. Erythrocytes, 3,570,000 per c.mm. Hæmoglobin value of erythrocyte, 78 per cent. Leucocytes, 8,800 per c.mm. : Finely granular oxyphil cells, 63 per cent. ; coarsely granular oxyphil cells, 3 per cent. ; hyaline cells, 32 per cent. ; lymphocytes, 2 per cent. The case was evidently one of combined oligocythæmia and oligochromæmia.

The patient was now placed on the organic iron preparation in ½-ounce doses three times a day. At the expiration of a fortnight there was considerable improvement in her general condition, and her blood was again examined with the following result :—

Droplet rather pale. Hæmoglobin, 60 per cent. Erythrocytes, 4,560,000 per c.mm. ; somewhat irregular in size. Leucocytes, 9,760 per c.mm. in the following percentages : Finely granular oxyphil cells, 59 per cent. ; coarsely granular oxyphil cells, 4 per cent. ; hyaline cells, 25 per cent. ; lymphocytes, 12 per cent.

It will be seen that the red corpuscles had risen from 3,750,000 to 4,560,000 per c.mm., or practically to normal, but that there was also a rise in the white corpuscles from 8,800 to 9,760 per c.mm. There was no improvement in the hæmoglobin, which had fallen from 65 to 60 per cent.

The oligocythæmia had disappeared, and it was now a case of uncomplicated oligochromæmia.

On the day following this observation the patient menstruated. The period was of short duration although normal in quantity.

The organic iron was now discontinued, and the patient was given 5 grains of exsiccated sulphate of iron in pill three times a day. No alteration was made in the diet. At the expiration of a fortnight another observation on the condition of the blood was made, with the following result :—

Red blood corpuscles, 4,500,000 per c.mm., rather irregular in size and shape. A few nucleated red corpuscles present. Leucocytes, 8,000 : Finely granular oxyphil cells, 52 per cent. ; coarsely granular oxyphil cells, 3 per cent. ; hyaline cells, 30 per cent. ; lymphocytes, 15 per cent. Hæmoglobin, 78 per cent.

Although there had been no further increase in the number of red blood corpuscles, which could not have been expected seeing that they had already reached the normal, there was an improvement in the hæmoglobin, which had risen from 60 to 78 per cent. This is satisfactory when it is remembered that there are few cases in which the hæmoglobin reaches its nominal maximum.

The author concludes that although organic iron is useful in cases of secondary anæmia, it is less efficacious than the inorganic salts of iron. This is in accordance with the teaching both of Ringer and of Stockman.

Otto Jallase[2] treated a number of chlorotic girls at first by rest in bed and a suitable diet, and later by iron in addition, and found that though the subjective symptoms improved, the percentage of hæmoglobin in the blood remained stationary until iron was added, when it immediately rose, at least 5 per cent. each week. In malarial anæmia, on the other hand, the percentage of hæmoglobin rose steadily after the malaria was cured, whether iron was given or not.

Hoffmann[3] made a series of observations on rabbits, some of which were given iron and some were not. Some of the rabbits were in a

normal condition of health, whilst others were rendered artificially anæmic by blood-letting. Particular attention was paid to the bone-marrow, spleen, and lymphatic glands, as specially concerned in blood formation ; but the liver, kidneys, and small and large intestines were also examined ; the blood corpuscles were counted and the hæmoglobin estimated. Various preparations of iron and hæmoglobin were tested as regards qualitative and quantitative absorption. He found that all forms of iron were absorbed in the duodenum, and entered the circulation in transport cells combined with albuminous matter in a combination which had no toxic action. It could be so demonstrated in large quantities in the spleen, liver, and especially in the bone-marrow, where crowds of these iron-laden cells were present, in the tardy blood-stream, in the parenchyma itself, and in the net-work of vessels within it. This organ alone exhibited after blood-letting a corresponding regenerative activity, an active hyperplasia of its parenchyma. The restoration of the red corpuscles was more rapid, the bone-marrow richer in its contents after the administration of iron, while the spleen and lymphatic glands showed no difference.

Iron given without blood-letting caused some increase of the red cells circulating and of the fat, but not of cell-formation in the bone marrow. The restoration of the hæmoglobin was not so complete ; there was no apparent increase in the colouring matter of the blood from the use of iron. The author thinks that iron has a stimulating action on the physiological activity of the bone-marrow, and accelerates the ripening and entrance into the circulation of the young cells therein produced as anuclear erythrocytes. Special preparations of iron are unnecessary, and those of hæmoglobin irrational. The action of the iron depends entirely on the quantity of metal absorbed.

The action of iron on the bone marrow throws some light on the nature of chlorosis. It seems probable that this affection consists in a diminished capability of production, leading to hypoplasia of the bone-marrow, in severe cases associated with a hypoplasia of the blood-conveying parts. This weakness of the blood-forming apparatus betrays itself in the depreciated production of erythrocytes, morbidly altered in form and contents of hæmoglobin. The author considers that this is the only theory as to the nature of chlorosis consistent with the specific action of iron, and is supported by the beneficial effect of venesection in this affection as being a stimulant to the blood-forming bone-marrow.

REFERENCES.—[1] "Med. Press and Circ.," May 9, 1900 ; [2] "Münch. Med. Woch.," Sept. 12, 1899 ; "Med. Rev.," Dec., 1899 ; [3] "Münch. Med. Woch.," 1899, No. 29 ; "Brit. Med. Jour.," Oct. 7, 1899.

LARGIN.

Pharmacy has provided several substitutes for nitrate of silver, such as protargol, argentamin, actrol, itrol, and argonin.

Largin, the latest of these synthetic compounds, occurs in the form of a stone-coloured, granular powder. It contains 11·10 per cent. of silver combined with protalbin, so that it is richer in the percentage of metal than any of the other compounds. Its watery solution has a brownish colour and an alkaline reaction, and keeps well in suitable phials. It is precipitated neither by albumin nor by chlorides.

Largin is a non-irritating bactericide possessing astringent properties.

Pezzoli and Finger have used it in **Gonorrhœa**. Marczel Falta was one of the first to publish anything with regard to its action in **Ophthalmic Disorders**.

Falta, by dropping a 1 per cent. watery solution into the eye several times a day, obtained good results in conjunctival inflammations and in catarrhal ulceration of the cornea. In diseases of the tear passages he used a 10 per cent. solution. Falta found no staining of the conjunctiva followed its application.

Sydney Stephenson[1] contributes an important paper on the use of this drug. For several months he employed it extensively in the treatment of superficial eye disorders, especially in the various forms of ophthalmia. Preliminary trials were made with a 3 per cent. watery solution, but that was soon replaced by a 5 per cent., and eventually by a saturated 10 per cent. solution ; the remedy was also used as a powder in some cases, such as phlyctenulæ of the conjunctiva. For the most part the remedy was painted over the exposed palpebral conjunctiva once or twice a day. In some kinds of ophthalmia the results have been in nowise inferior to those obtained with silver nitrate, over which largin has one obvious practical advantage in the fact that its application neither causes pain nor is it followed by any appreciable reaction. Largin is, however, much more expensive than lunar caustic. It is to be especially noted that if used for more than a few weeks, largin certainly does stain the conjunctiva.

The author's results with gonococcal ophthalmia have been of a disappointing character. Largin was distinctly inferior as a curative agent both to protargol and to silver nitrate.

In the common acute contagious ophthalmia, due to the Koch-Weeks bacillus, largin has yielded very different results. In twenty such cases, some of a severe nature, a rapid cure followed the daily application to the conjunctiva of a 10 per cent. solution. In that particular affection the author's experience leads him to believe that

a 10 per cent. largin is as effectual as a 2 per cent. silver nitrate solution. In acute trachoma (also often associated with the Koch-Weeks bacillus) largin has given good results.

Largin is also of service after **Trachoma Operations**, as, for example, squeezing or "brushing" the conjunctiva, where it is equal to silver nitrate.

Largin will sometimes bring about a speedy cure in that form of chronic ophthalmia associated with the diplo-bacillus of Morax. But, as a rule, it is markedly inferior to a watery solution of zinc sulphate, 10 to 40 grs. to the ounce.

The author finds that largin, when applied to the conjunctiva, causes little, if any, pain, and in that respect has an obvious advantage over silver nitrate. At the same time it is even more likely than lunar caustic or protargol to stain the palpebral conjunctiva of an indelible light brownish hue. The discoloration affects mainly those parts to which the largin has been directly applied—namely, the lower and the upper tarsal conjunctiva. It is due to the deposition of tiny granules of silver in the lymphatic and perilymphatic structures of the mucous membrane. The author has collected ten instances of this so-called argyrosis.

Stephenson's conclusions are summed up as follows: The application of largin, even in concentrated form, is painless, but, when prolonged beyond a few weeks, may stain the conjunctiva. It acts well in blepharo-conjunctivitis, and in some cases of dacryocystitis. It is an efficient substitute for silver nitrate in any of the conjunctival inflammations associated with the Koch-Weeks bacillus, such as acute infectious ophthalmia and acute or subacute trachoma. It acts admirably as a temporary remedy after any of the operations commonly practised for the relief of chronic trachoma. In gonorrhœal ophthalmia, on the contrary, it is distinctly inferior both to protargol and to silver nitrate. In diplo-bacillary conjunctivitis, too, it does not succeed so well as zinc sulphate. In short, largin seems likely to gain a permanent place among the somewhat restricted number of remedies employed in every-day eye work.

REFERENCE.—[1] "Brit. Med. Jour.," March 17, 1900.

For other papers covering the same ground see "Wien. klin. Woch.," Nos. 11 and 12, 1898; "Cent. f. prak. Aug.," Feb., 1899; "Arch. f. Derm. u. Syph.," xliv., 3, 1898.

MERCUROL.

This substance is a chemical compound of nucleinic acid with mercury, the nucleinic acid being obtained from yeast. (See "Nucleol.") It is in the form of a brownish-white powder, and

soluble in water but insoluble in alcohol. It does not precipitate albuminous liquids and is not precipitated by alkalies. The action of the mercury is rendered more effective and less irritating than it would be outside of this combination. It is not claimed that the nucleinic acid exerts any remedial action, but only that it facilitates the action of the mercury. The effect claimed for the nucleinic acid admixture is to render it possible to administer mercury in much larger doses than otherwise would be possible and without pain or disagreeable symptoms to the patient.

Ramon Gueteras[1] has used it with success in **Urethritis.** In prescribing the mercurol solution in these cases a 2 per cent. solution was ordered and the patients were directed to inject themselves with it by means of a small urethral syringe after urinating three times a day, and to hold in the injection each time for five minutes.

Mercurol quickly destroys the gonococcus. lessens the severity of the inflammation, and tends to prevent the development of complications, but does not possess the power of entirely stopping the discharge in all cases ; and it would seem that after the discharge has developed into a moisture and gonococci are no longer found in it, or in urethral shreds in the urine, that it might be better to change from a mercurol solution to a mild astringent one.

REFERENCE.—[1] "Lancet," Sept. 22, 1900.

MERCURY.

Wallace Beatty[1] advocates the employment of mercury in **Disease of the Heart.** Mercury is given in heart disease both for its purgative and diuretic action.

The author administers it almost exclusively for its diuretic action, in small doses, frequently repeated. He gives a pill containing $\frac{1}{2}$ a grain of calomel, usually with digitalis and squill, every four hours, night and day, for from ten to fourteen days. If these pills cause purgation, he gives them combined with opium. He has two sets of pills prepared, one set containing calomel, with squill and digitalis, the other set containing in addition $\frac{1}{8}$ of a grain of powdered opium in each. The nurse is directed to give a pill every four hours, either with or without opium, according to circumstances ; one or two motions in the twenty-four hours being considered sufficient. Often few or no opium pills are needed. After five or six days, or sometimes in about eight days, an improvement in the condition of the patient generally shows itself, a free flow of urine, as much as 100 ounces in the twenty-four hours, and a concurrent subsidence of the dropsy manifest themselves. In the next few days the symptoms of

general venous engorgement diminish rapidly. At the end of about fourteen days the gums may be a little sore; the mercury is then stopped, and iron ordered, combined or not with digitalis, according to the condition of the pulse. This treatment may be repeated again and again when recurrences of general venous congestion manifest themselves. In some cases mercury is not well borne, but these are exceptional. The state of the pulse will determine whether mercury is to be given alone or in conjunction with digitalis and squill: often the action of digitalis seems to be aided by the diuretic effect of mercury.

The following are the cases in which mercury does good:—

(1,) The most typical condition is one of general venous engorgement due to chronic primary mitral valve disease. There is a rapid, irregular, compressible pulse, physical signs of dilatation of the heart, a regurgitant or obstructive mitral murmur, full and pulsating cervical veins, an enlarged, congested liver, high coloured, scanty, albuminous urine from congested kidneys, anasarca, and perhaps some ascites; in short, all the evidences of back pressure.

(2.) Cases of general venous engorgement dependent upon mitral incompetence (relative incompetence), secondary to old-standing aortic regurgitation.

(3.) Cases of dilatation of the heart with general dropsy, but yet no obvious valvular disease, there being no murmur and no evidence of kidney disease.

(4,) Cases of general venous engorgement from failure of the right heart, caused by emphysema and bronchitis.

(5,) Cases of general venous engorgement due to cardiac dilatation following upon long-continued hypertrophy of the left ventricle, due to chronic interstitial nephritis.

The author points out that mercury stimulates the salivary glands, so it is probable that a similar action of mercury on the renal epithelium partly accounts for the increased secretion. Yet this does not appear to fully explain the action of mercury in cardiac dropsy, as it is noteworthy that the increased flow of urine only continues as long as there is dropsical fluid to be absorbed. Mercury may, therefore, act by increasing the activity of absorption, but it is not likely that its action is exclusively one of stimulating absorption. Its good effect in cardiac dropsy are explicable on the theory that it acts both by increasing the activity of absorption, and at the same time increasing the activity of renal secretion.

Alexander Morrison[2] calls attention to Finkelstein's[3] method of producing diuresis in **Cardiac Dropsy.** The method consists in the

exhibition of from $\frac{1}{5}$ to $\frac{4}{5}$ of a grain of calomel every two hours, that is, from 1 to 5 grains daily given in small and frequently repeated doses for a period of four or five days and in ultimately combining the calomel with small doses (from $\frac{1}{4}$ to $\frac{1}{3}$ of a grain) of the powder of digitalis leaves. Finkelstein states that mercurialisation or purgation rarely resulted and readily ceased on abandoning the drug for a time, and that the diuretic effects continued for a week or ten days after calomel had ceased to be administered. The diuretic effect usually manifested itself on the fourth or fifth day, and the quantity of urine voided often amounted to 7 litres or about 12 pints during twenty-four hours.

REFERENCES.—[1] "Dublin Jour. of Med. Sci.," Oct., 1899; "Med. Chron.," Dec., 1899; [2] "Lancet," Oct. 28, 1899; [3] "Gaz. Hebdom. Méd. de la Russie Méridi," Nos. 31–34, 1895; "Wien. Med. Presse," No. 44, p. 1670, 1895

NITROGLYCERIN.

Prof. C. R. Marshall,[1] of St. Andrews, in a paper on the pharmacological action and therapeutic uses of the organic nitrates points out that, although nitroglycerin has been given empirically in a large number of diseases, rationally only two groups seem to indicate its employment. These are: (1,) Those diseases connected with actual or relative spasm of unstriped muscular fibre; and (2,) Nervous diseases. A third group might possibly be found in conditions associated with deficient excretions, whether leading to the accumulation of poisons or not; but as better remedies exist for the treatment of these, its use is superfluous. The same may be said with regard to nervous diseases. Epilepsy, tetanus, and sea-sickness are much more amenable to other forms of treatment. The only group left, therefore, is that connected with spasm, relative or actual, of smooth muscle fibre; and this may be sub-divided into two main divisions—circulatory and respiratory—other conditions of this class (colic of various kinds, etc.) are much better relieved in other ways. As regards respiratory diseases, spasm of the bronchial tubes (**Asthma**) is sometimes benefited by the administration of nitroglycerin; and relief in other kinds of dyspnœa is said to occur. That some influence is exerted on the bronchial muscles there can be no doubt. In most cases of asthma, however, the results obtained by this drug are disappointing; and in part this is explained by Winkler's research on the action of amyl nitrite on the lung. He found that swelling, œdema, and rigidity resulted from its use. In pneumonia and other respiratory diseases, there seems to be no rational basis for the use of nitroglycerin.

Nitroglycerin is of the greatest value in conditions affecting the circulation; and, as far as experimental evidence goes, only in conditions accompanied by an increase in arterial pressure. When this occurs and gives rise to symptoms, such as pain, these are quickly relieved by nitroglycerin. But cardiac pain is not always so caused, and in these cases vaso-dilators, as a rule, fail to relieve. Whether these drugs act in any other way than by dilating the arterioles we do not know. Murrell's experience with large doses of nitroglycerin would suggest that they do so, as it appears unnecessary, even after continued use, to employ such doses for purely vaso-dilating effects. A sedative effect upon the nerve terminations about the heart and aorta has been suggested, but, as yet, has not been proved.

M. G. Price,[2] of Moshein, Tenn. finds nitroglycerin useful in attacks of asthma, to which he is subject. He states that a granule containing $\frac{1}{250}$ gr. crushed between the teeth will relieve the dyspnœa in thirty seconds. In his practice he employs it in all cases in which pallor of the face and coldness or clamminess of the surface are prominent symptoms. He has given it with success in **Hepatic, Renal Uterine and Intestinal Colic.** He states that it is indicated in **Labour** when the pains are feeble or infrequent.

Gerest,[3] of St. Etienne, speaks favourably of the use of nitroglycerin in the treatment of **Raynaud's Disease.**

REFERENCES.—[1] "Med. Chron.," Sept., 1899; [2] "Med. Brief," vol. xxv., No. 7; [3] "Med. Press and Circ.," Sept. 26, 1900.

NUCLEOL.

Karl Schwickerath[1] has succeeded in obtaining a pure nuclein in the form of a white amorphous powder which he has named nucleol. It is soluble in warm water but insoluble in alcohol. Its solubility in water is increased by the addition of alkalies. When freshly precipitated mercuric oxide is added to a solution of nucleol in water the mercuric oxide is gradually dissolved. This reaction is accelerated by gentle warming. If, to the solution thus obtained, a large quantity of alcohol is added, a voluminous white precipitate is formed, which represents a new chemical compound of nuclein with mercury. The silver, copper, and iron oxides react in a similar way with nucleol.

These new compounds are readily soluble in water, particularly warm water, with neutral or faintly alkaline reaction, and they contain the metals in true chemical combination. They do not precipitate solutions of albuminous substances.

Schwickerath gives the following particulars concerning the new compounds he has prepared:—

Nucleol.—A pure nuclein from yeast. It exists in the form of a whitish powder, readily soluble in warm water ; insoluble in alcohol.

Mercurol.—A nucleide of mercury, containing about 10 per cent. of the latter in organic combination. It is in the form of a light brownish-white powder ; is soluble in water, especially warm water, with faintly alkaline reaction ; insoluble in alcohol. It does not precipitate albuminous liquids and is not precipitated by alkalies. In preparing solutions, instead of plain distilled water, salt solution (1 drachm of sodium chloride to 1 pint of water) should be employed. (See "Mercurol.")

Nargol.—A nucleide of silver containing about 10 per cent. of the latter. It exists in the form of a light brownish-white powder ; is readily soluble in warm water, with faintly alkaline reaction. It does not coagulate albumin and is not precipitated by alkalies or the ordinary reagents for silver. When solution of sodium chloride is added to a nargol solution no precipitation takes place. After standing for a long time, however, a gradual decomposition and separation of silver chloride occurs.

Cuprol.—A nucleide of copper, containing 6 per cent. of the latter. It exists in the form of a green powder ; is readily soluble in warm water. Its solution does not coagulate albumin, and is not precipitated by alkalies, etc.

Ferrinol.—A nucleide of iron, containing about 6 per cent. of the latter It exists in the form of a cinnamon-brown powder ; is readily soluble in warm water, with neutral reaction ; does not coagulate albumin and is not precipitated by the ordinary reagents for iron.

There is no doubt that these experiments have furnished us with a new series of therapeutical agents. Up to the present there is no report as to their therapeutical value.

REFERENCES.—[1] "New York Med. Jour.," Sept. 30, 1899 ; "Med. Chron.," May, 1900.

ORTHOFORM.

A complete account of the pharmacological action and uses of this substance will be found in the "Medical Annual," 1899, p. 54.

Dr. Eugene S. Yonge [1] summarises our knowledge of the subject. The drug is a white, voluminous, odourless powder, sparingly soluble in water, freely soluble in spirit and ether. It is a strong anæsthetic, and an appreciably antiseptic. It is a synthetic product, introduced by Einhorn and Heinz, of Munich. They began the investigation with the idea of finding the hypothetical molecule of cocaine, which would produce anæsthesia and be free from toxic qualities. For a considerable time they worked among the atoms of cocaine, breaking up the

drug into its chemical constitutents, turning them over and putting them together again. At last they found something which induced them to turn their attention to certain aromatic bodies. Out of these they were enabled to build up a substance which, while strongly anæsthetic, was practically non-toxic.

Compared with iodoform, orthoform, possesses the advantages of: (1,) Much greater anæsthetic and analgesic power; (2,) More prolonged action, owing to the slow solubility; (3,) Absence of odour; (4,) Less liability to produce toxic symptoms. The drug is inferior to iodoform in that it will not act efficiently on unbroken skin or mucous membrane; it is essential that the nerve-endings of the affected part be exposed. The most notable results of orthoform are obtained in cases of **Painful Ulceration.** When applied to an ulcer, anæsthesia and analgesia begin in from five to ten minutes, and last from an hour or two to several days, according as the affected region is exposed to friction or to the action of free discharge, either of which will tend to remove the drug, especially if applied as a powder.

Orthoform has a remarkable effect on **Burns** of the third degree, and on **Ulcers** of all descriptions.

In the upper air passages it is useful in **Tuberculous** or **Syphilitic Ulcerations of the Larynx.** It affords relief in **Ulcerations of the Tonsil,** and in **Tender Intra-nasal Conditions** where there has been loss of substance.

Kallenberger found the drug of value in **Dentistry**, especially when painful nerve-endings were exposed: orthoform was introduced into the opening in the tooth and the aperture closed with wool or wax.

Neumayer has employed the drug, with success, in **Urethral Pain.** He used a 5 per cent. solution of the hydrochloride of orthoform; it caused slight burning, for a short period before anæsthesia supervened.

Blondel has used orthoform in **Gynæcology** to obviate the discomfort attending dilatation of the os uteri, to prevent the pain of curettement, and in other conditions.

Boisseau's experience of the drug in ocular work is favourable. The anæsthetic was employed for the relief of **Corneal Ulcers**; and in these cases the pain and photophobia rapidly diminished. The preparation of the drug recommended for ocular work, is an ointment made with lanolin. The analgesia lasts at least twelve hours.

Beneficial results have followed the internal administration of orthoform in $\frac{1}{2}$ gramme doses for **Ulceration** or **Cancer of the Stomach.** For this purpose it is superior to iodoform.

Orthoform has a very definite antiseptic power: inducing a speedy diminution of purulent exudation and an acceleration of the healing

process. Instances of fresh infection have been reported in which pus formation and gonococci have disappeared in the course of a few days as a result of injections of orthoform in solution.

Kallenberger is of opinion that orthoform hinders fermentation and putrefaction. He found that portions of rabbit's muscle rubbed in the dust and subsequently placed in water 37° C. for twenty-four hours rapidly became putrid. Similar pieces of muscle treated in the same manner, but sprinkled in addition with orthoform, remained sweet at the end of a like period.

Brocy and Asam-Murnau have reported instances of poisoning by orthoform; and the latter observer, in referring to the unfavourable symptoms of a local character which the drug may give rise to, mentions sloughing of the ulcer for which the substance had been exhibited.

Guinard and Soulière[2] finds that the effects of orthoform are analgesic in the true sense of that word, rather than anæsthetic. Orthoform in solution is readily absorbed by the stomach and intestines. When merely suspended and introduced into the stomach it is acted on by the hydrochloric acid of the gastric juice (hence a hydrochlorate is formed), becomes soluble, and is absorbed. Injected under the skin and into the peritoneum, it is rapidly absorbed. When applied in the form of powder to wounds, only a small proportion is dissolved by the fluid present. When absorbed, it is a remarkable nerve depressant. This occurs in all animals (dogs, rabbits, frogs); the depression is preceded by a stage of excitation. The depressant effects are of central origin, whereas most of the peripheral modifications require the direct contact of the drug with the terminal elements. Under the influence of orthoform arterial pressure is lowered; the action of the heart is greatly accelerated; the respiratory movements are also more rapid. There is increased glandular secretion, notably of the saliva and tears, which are coloured yellow. In dogs large doses introduced into the stomach lead to vomiting: but nausea and vomiting are also observed when orthoform is injected subcutaneously or intraperitoneally. Its safety, when used as a local analgesic, is due to the fact that it is but slowly absorbed; moreover, in moderate doses, it is readily eliminated.

REFERENCES.—[1] "Med. Brief," Feb., 1900; [2] "Arch. Internat. de Pharm. et de Thérap."; "Brit. Med. Jour.," Aug. 19, 1899.

OSMIC ACID.

Neuber in 1883 and Eulenberg in 1884 recommended osmic acid in the treatment of **Obstinate Neuralgia**, but the suggestion received but little attention.

E. Franck [1] has recently recorded two cases in which he obtained excellent results. He uses injections of $\frac{3}{4}$ gramme of 1 per cent. solution over the painful spot. He points out that the treatment is only successful when the injected fluid can act directly on the affected nerve—as in the supra-orbital nerve. He thinks that the treatment is not of much service in sciatica, on account of the difficulty in striking the painful branch. A watery solution of osmic acid is recommended. For two or three minutes after the injection there is great pain, but this gradually ceases and gives place to numbness.

W. H. Bennett [2] reports ten cases of persistent neuralgia in which he employed injections of osmic acid into the affected nerves or their branches. His method is as follows: The nerve having been exposed at the spot indicated by as small an incision as possible, which in the case of the supra-orbital, infra orbital, or mental branches need rarely exceed half an inch in length, is hooked up for purposes of fixation. The solution of osmic acid (1·5 per cent.), freshly prepared, is injected by means of a sterilised hypodermic syringe, the needle of which is passed along in the substance of the nerve as far as it can be made to go. The total amount injected should be from 5 to 10 minims, and it should be introduced in two or three separate injections in order that the whole nerve may be as much as possible soaked in the solution. During the injections a pledget of sterilised gauze or wool should be firmly held around the needle at the orifice of the wound in order to prevent the escape of fluid externally. The amount of the solution really taken up in the nerve itself must of course be very small, and the retention in the operation wound of what regurgitates from the nerve probably aids the treatment by its effect upon the nerve-ends exposed on the cut surfaces. The effect of the solution upon the soft tissues is an immediate blackening of them all, the blood which escapes becoming ink-like in colour.

The author states that this is the most successful method of treatment with which he is acquainted.

REFERENCES.—[1] "Deut. Med. Woch.," 1898; "Med. Chron.," Jan., 1900; [2] "Lancet," April 4, 1900.

OVARIAN JUICE.

Considerable doubt still exists as to the amount of reliance to be placed on ovarian organic therapeutics, and further observations are needed. An account has already been given of the experiments of Ferré and Bestion.[1]

Prosper Mossé [2] adopts the view that the ova are the "external secretion" of the ovary, while the gland has also an "internal

secretion" by no means indispensable, but useful in regulating the functions of the female organism.

Grafting of ovarian tissue is cited as a proof of the existence of an internal secretion and of its effects. This operation has been followed by pregnancy in various animals, and Morris, of New York, grafted ovarian tissue from one woman into another woman who had never menstruated with the effect that menstruation began. In another case he removed both ovaries from a woman, and inserted ovarian tissue from another patient. This woman became pregnant, but aborted. Glass had a similar case, in which menstruation followed ovarian grafting in a patient who had a premature menopause and whose ovaries had been removed.

The dose is from 10 to 20 grammes or more of the fresh gland, or its equivalent dried and powdered, or in the form of an extract. There is no risk of serious results such as those sometimes observed in connection with the administration of thyroid gland.

The author found it useful in two cases of **Troubles at the Menopause.** After removal of the ovaries unpleasant symptoms often appear, and in the treatment of these, ovarian substance is seen at its best. In two hundred and twenty-four cases Jacobs secured one hundred and sixteen complete cures, forty-eight partial cures, sixty-one ameliorations, and nineteen failures. The author has collected forty-one additional cases ; in six complete cures, in twenty-five great amelioration, in five temporary improvement, and in five failure.

The author records two successful cases of **Amenorrhœa,** and quotes several others. He has not used it in **Dysmenorrhœa,** but gathers from the literature that in certain cases it has been used with advantage. (See also "Senecio.")

REFERENCES. —[1] "Med. Ann.." 1900, p. 35 ; [2] "Gaz. des Hóp.," Oct. 7, 1899 ; "Med. Chron.," Dec., 1899.

PHENACETIN.

This drug is usually supposed to be one of the safest of the synthetical analgesics, but as an antipyretic, even in small doses, its use is not unattended with danger. Murrell[1] mentions a case of **Enteric Fever** in which it was given in small doses to reduce the temperature. At 4 p.m. the temperature was 103·4° F., and the patient, a man aged twenty-eight, was given 5 grains of phenacetin. An hour later the temperature had fallen to 101·4°. At 8 p.m. he had a severe rigor lasting over half an hour for which stimulants had to be given freely. The temperature fell to 100° rising again to 102° at midnight. A few days later the temperature being 103·2° he was given a second dose of 5 grains. This was followed by a prolonged and very severe

rigor, and at 8 p.m. his temperature was 96°, a fall of 7·2° in four hours. At midnight, however, the temperature was 104·2°, showing a recovery of 8·2° in four hours. The drug was not given again and its employment was considered inexpedient.

H. C. Wood, jun., and H. B. Wood[2] have investigated the physiological action of the drug. They find that :—

(1,) Moderate doses of phenacetin are without any distinct action on any vital organ.

(2.) Large doses lessen reflexes by a direct action on the spinal cord.

(3,) Doses of 0·5 grm. per kilo. of body weight (a little less than 1 ounce for a 150 lb. man) kill by arrest of respiration.

(4,) Doses even up to 0·5 grm. per kilo. have no distinct effect on the circulation.

REFERENCES.—[1] "Brit. Med. Jour.," June 2, 1900; [2] "University Med. Mag.," July, 1900: "Med. Chron.," Aug., 1900.

PLASMON.

This substance consists practically of the casein of milk separated by a simple process and dried. It is a tasteless, odourless white powder entirely soluble in water, though the solution exhibits a slight opalescence similar to that of milk. The dry powder swells up in water to a gelatinous mass which dissolves as more water is added. On boiling the solution a "skin" forms at the top of the liquid in the same manner as in fresh milk. The important dietetic salts of milk are retained in the preparation. When aërated waters are mixed with milk the casein separates in fine digestible curds and not in voluminous indigestible clots. Plasmon is practically the casein of milk thus separated and afterwards dried in a stream of the same gas (carbonic acid) which separates the proteid from milk serum.

A 'Lancet'[1] analysis gives the following results: Moisture, 10·76 per cent.; Mineral matter, 7·24 per cent.; Milk fat, 0·70 per cent.; Proteids, 81·30 per cent.

Excluding the moisture these results show that dry plasmon contains over 90 per cent. of pure proteid.

Professor Virchow, of Berlin, finds that the albumin in plasmon is in its original unaltered condition, and that plasmon can replace all other albumin foods. He finds, further, that it is extremely digestible, and in some interesting experiments made upon himself in which the diet consisted almost entirely of plasmon the results were highly satisfactory.

Plasmon has been found of great value as a nutrient in enfeebled conditions of the digestive organs, and to be an excellent means of

administering food to the sick. It is valuable as a prelude to solid food for patients convalescing after disease or after surgical operation. It contains all the salts of milk including the phosphates, while even a small quantity of common salt may be extracted from it. It may be employed with advantage for enriching foods or for raising their actual flesh-forming value to a high and trustworthy degree. The variety of ways in which plasmon may be prepared need not be enumerated when regard is had to the fact that it is soluble in water. Thus a powerful nutrient may be administered to a patient without his knowledge, as the solution of plasmon is practically tasteless and odourless. The preparation contains no alkali and is permanent for an indefinite period in the dry state. The chemical analyses show that it contains a remarkably high proportion of proteid, and physiological experiment has established that this proteid is completely available for the nourishment of the human body.

Murrell[2] reports a case of **Enteric Fever** of three months duration in which at the most critical period of the disease it was given with advantage and without producing any elevation of temperature. He advocates a departure from the rule that nothing but milk should be given until the temperature has been normal for ten days.

Prof. F. W. Tunnicliffe,[3] of King's College Hospital, London, and Dr. Otto Rosenheim have published a valuable contribution to our knowledge of proteid metabolism in children. They thought that it would be of interest to determine whether milk proteid was capable of replacing meat in the food of children between three and six years. For children of this age it might be useful to have a food which, while capable of supplying the necessary nitrogen in convenient bulk, differed to a less degree from the ideal food of the suckling period—namely, milk—than ordinary meat. Such a food might be of especial value in the bringing up of delicate children. It was in this connection that plasmon recommended itself especially to them as being an unaltered milk proteid prepared from skimmed milk upon a large scale.

The source of plasmon increases the interest of this subject from an economic standpoint. For although the advancement which has taken place in cold storage has greatly facilitated the transport of meat, and thus cheapened one of the most important sources of nitrogenous food, nevertheless an abundant supply of a cheap food equal in dietetic value to meat, is a distinct economic desideratum.

Two sets of experiments were made, in the first of which bread enriched with plasmon was compared on the one hand with ordinary white bread, and on the other with meat. In the second set, milk

fortified by the addition of plasmon was compared with ordinary milk. The respective foods were submitted at blood temperature under similar conditions to the action of the gastric and subsequently of the pancreatic ferments. The nitrogen was estimated in the undigested residue.

The authors found that they could by means of plasmon increase the proteid content of milk almost *ad libitum*, without appreciably increasing its bulk, and further that the digestibility of this fortified milk was not inferior to that of ordinary milk.

Comparative observations were made upon metabolism in children during ordinary and milk proteid (plasmon) diet, and the authors found that plasmon both from the point of view of its assimilability and flesh-forming power was equal in children of from two to five years of age to meat. The increase of body weight is very marked. In one instance on a meat diet the weight of the child remained constant, whilst on a plasmon diet in the same time it increased 780 grains. The conclusions at which the authors arrive are that:—

(1,) Plasmon is capable of replacing meat as a nitrogenous food in the mixed diet of children according to its nitrogen percentage.

(2.) A greater increase in body weight takes place during the milk-proteid periods than during the meat periods.

(3,) The phosphorus of plasmon is assimilated and retained in the body.

Dr. L. A. Leney[4] thinks that the most important use for plasmon will be found in cases in which the digestive system is so seriously deranged that death is likely to ensue from slow starvation. In many cases, complicated perhaps with vomiting and diarrhœa, the stomach will only tolerate the smallest amount of food. Such small quantities of nourishment presented in the form of milk or beef tea are totally insufficient, but when the same quantity is of such a high nutritional value as plasmon, 1 tablespoonful of which is equal in nourishing powers to that of a ¼ of a pound of fillet of beef, or 1 ½ pints of milk, the enormous superiority of plasmon in these cases is at once appreciated.

He points out that it does not cause gastro-intestinal irritation, that it leaves no undigested residue which might excoriate or irritate inflamed mucous membranes, that it excites neither distaste nor intolerance on the part of patients, while it enables us to regulate the supply of nitrogenous substances in accordance with the requirements of the patient, who is spared the necessity of swallowing large quantities of fluids in order to obtain the required amount of nutriment.

It is stated that it promotes the secretion of the milk in women who are suckling.

Plasmon is cheap costing only 2/6 a lb. The usual dose is a teaspoonful in 5 ounces of milk. It makes excellent bread and can also be obtained in the form of plasmon chocolate.

REFERENCES.—[1] "Lancet," Aug. 11, 1900; [2] "Brit. Med. Journ.," June 2, 1900; [3] Ibid., Oct. 13, 1900; [4] "Med. Press and Circ.," Oct. 10, 1900.

PODOPHYLLIN.

H. Mackenzie and W. E. Dixon[1] have made a careful study of the therapeutical action of podophyllin with special reference to the Indian variety. They find that Indian podophyllin is nearly twice as physiologically active as the American variety.

The active principles contained in the crude resin are two substances (*a*,) crystalline podophyllo-toxin; (*b*,) podophyllo-resin —both of which act as laxatives in small doses without producing constipation. Both these substances have a similar action on the alimentary tract, but only the podophyllo-resin exerts a true cholagogue effect shown rather by a large increase of the solids excreted than by an increased quantity.

Both exert their specific activity when injected hypodermically in alcoholic solution, but in man so much irritation is produced as to forbid their employment in this manner.

REFERENCES.—[1] "Edin. Med. Journ.," vol. iv.; "Med. Chron.," April, 1899.

SENECIO.

Senecio Jacobœa, the common ragwort, is largely used in the treatment of **Functional Amenorrhœa** not due to anæmia.

An account has already been given with bibliography[1] of papers by Murrell[2] and W. E. Fothergill.[3]

Grandval and Lajoux[4] have obtained from the underground parts of many species of senecio two alkaloids which they have named senecine and senecionine, in quantities ranging from 0·006 to 0·42 gramme per 1000 grammes. They are bitter substances yielding salts soluble in water.

Lutz[5] has published a paper on the alkaloids of the senecios, and Wiet[6] has investigated the physiological action of senecionine.

J. L. Bunch[7] has published an important paper on the physiological action of senecio jacobœa. Preparations made from the entire plant were employed. The effect of the drug on the heart was recorded by Schäfer's heart-levers, connected with the auricle and ventricle respectively, tracings being taken on smoked paper. The carotid pressure was recorded at the same time, the anæsthetic being varied in different experiments.

Intravenous injection of small quantities of an alcoholic solution caused a slight rise of general blood pressure, accompanied by some diminution in the magnitude of both auricular and ventricular contractions, the diminution being, however, somewhat more marked in the case of the auricle. Such effects are not produced by alcohol alone of the same strength.

After several injections, or after one large dose, further injection of the alcoholic extract caused a fall of general blood pressure with slowing of the contractions of the heart, and increase in the excursions of the kymograph. This effect was repeated unless a considerable interval was allowed to elapse before more of the drug was injected, when a further small injection again caused some rise of general blood pressure. It appears, therefore, that there are contained in the entire plant two substances with distinct physiological action, but how far these substances correspond with the alkaloids previously mentioned is doubtful.

Intravenous injection of a watery extract of the residue obtained by evaporating down the alcoholic solution, driving off all the alcohol, taking up in water and filtering, caused a marked fall of blood-pressure, with slowing both of the auricular and ventricular contractions, and sometimes irregularity, especially of the auricle. This fall of blood-pressure was followed by a slight rise due to constriction of peripheral vessels, cardiac inhibition still causing some slowing of the heart beats. This effect on the heart was not abolished by division of the vagi, but after the previous injection of a small dose of atropine (0·004 gramme for a dog of 7 kilos.), either in the same dog after a considerable interval, or in another dog, cardiac inhibition was not produced by further administration of the watery extract. As the action of atropine is on the cardiac nerve endings, these experiments show that the cardiac action of the drug is directed to the nerve terminations in the heart, and is not due to direct action on the muscular fibres of that organ.

The author arrives at the following conclusions :—

(1,) Injection of an alcoholic extract of the entire plant of senecio jacobœa into the circulation of a dog in small doses causes a rise of general blood pressure, with constriction of peripheral vessels and of vessels of the intestinal area. This effect is accompanied by a diminution in the magnitude of the contractions both of the auricle and of the ventricle.

(2,) Large doses (0·8 to 1·0 gramme for a dog of 7 kilos.) of the drug cause a fall of general blood pressure, with dilatation of the intestinal vessels and inhibition of the contractions of the intestinal coat.

(3,) After several injections of small doses, or after one large dose of the alcoholic extract, further injections produce a fall of blood pressure, with slowing of the heart, and this effect is repeated unless a considerable interval is allowed to elapse before any further injection of the drug, which then again causes some rise of general blood pressure.

(4,) The entire plant, therefore, contains two substances with distinct physiological actions ; but the author has not up to the present been successful in isolating them.

(5,) Watery extracts of the residue obtained by evaporating the alcoholic solution produce a fall of blood pressure and cardiac inhibition, due to the action of the drug on the nerve terminations in the heart, and not to direct action on the muscular fibres of that organ.

(6,) The substance which causes a rise of blood pressure is not contained in such watery extracts, or, if present, only in small quantities.

The paper is illustrated by a number of tracings, some of which are printed upside down.

Murrell[8] discusses the question whether senecio jacobœa is useful in amenorrhœa due to anæmia. His observations were made on a girl of twenty who had been persistently anæmic and irregular for some years. Her blood was examined on June 18th with the following result :—

Hæmoglobin, 45 per cent. ; erythrocytes, 3,100,000 per c.mm. ; leucocytes, 5,440 per c.mm. ; varieties of leucocytes (finely granular oxyphil cells, 70 per cent., coarsely granular oxyphil cells, 4 per cent., hyaline cells, 2 per cent., lymphocytes, 24 per cent.) ; hæmoglobin value of red blood corpuscles, 68 per cent.

It was an ordinary case of oligocythæmia and oligochromæmia combined.

On the following day she was ordered 2 drachms of a 1 in 10 proof spirit tincture of senecio jacobœa in a mixture flavoured with syrup of lemon and spirit of chloroform. This was taken three times a day until July 5th, but the menstrual function was not re-established, and there were none of the phenomena usually observed prior to the occurrence of menstruation.

On July 6th her blood when examined showed :—

Hæmoglobin, 55 per cent. ; erythrocytes, 4,500,000 per c.mm. ; leucocytes, 6,720 per c.mm. ; varieties of leucocytes (finely granular oxyphil cells, 66 per cent., coarsely granular oxyphil cells, 2 per cent., hyaline cells, 28 per cent., lymphocytes, 4 per cent.)

It will be seen that there was some improvement both with regard

to the number of red blood corpuscles and the amount of hæmoglobin, but it does not follow that this was due to the senecio, for her general hygienic conditions had been improved. She was having absolute rest in bed and a dietary which was ample.

On July 7th she was given 5 grains of dried sulphate of iron three times a day, and on July 23rd the anæmia, swelling of the legs, and all the subjective symptoms having disappeared, she was sent to a convalescent home. The menstrual function was not restored.

To have made the demonstration absolutely complete she should have been given senecio again until she menstruated, but this observation had been so frequently made in other patients that it was not worth while repeating it.

This case shows that when amenorrhœa is associated with marked anæmia a preliminary course of iron is necessary before the administration of the emmenagogue.

Senecio has been recommended in the **Impotence** of the aged, but there is no conclusive evidence as to its efficacy.

REFERENCES.—[1] "Med. Ann.," 1898, p. 58; [2] "Med. Press and Circ.," April 25, 1894; "Brit. Med. Journ.," 1894, vol. i., p. 679; "Med. Brief," July, 1897; [3] "Med. Chron.," Nov., 1896 and Sept., 1897; [4] "Journ. de Pharm. et de Chém." 1895, Seriex, 6 T. ii., p. 15; "Comp. Rend.," cxx., p. 1120; "Pharm. Journ.," vol. i., 1895; [5] "Bull. Soc. Bot. de France," July 26 and Nov. 22, 1895; [6] "Union. Méd. du Nord." Nov. 10, 1895; [7] "Brit. Med. Journ.," July 28, 1900; [8] "Med. Press and Circ.," Aug. 29, 1900.

SOMATOSE.

Somatose is a food and not a medicine. The name is supposed to be derived from *σῶμα*, signifying the body. From the "Lancet"[1] report it appears that "the preparation consists substantially of about equal quantities of deutero- and hetero-albumose, with mere traces only of peptone. It yields a nearly clear and almost tasteless solution which responds to all the known tests which distinguish albumose from true peptone. A saturated solution of ammonium sulphate throws down practically the whole of the proteids from the aqueous solution. Analysis gave the following results: moisture 11·50 per cent.; solid matter, 88·50 per cent.; albumose, calculated on 12·30 per cent. nitrogen, 77·49 per cent.; mineral matters, 5·00 per cent. It may be remarked that, although the amount of mineral matter is high, yet it contains a disappointing proportion of soluble phosphate —less than ½ per cent. of the whole substance—the bulk of it consisting of alkaline carbonates."

Stevenson and Luff[2] arrive at the following conclusions: (1,)

Somatose is a true meat nutrient possessing restorative and stimulating powers ; (2,) It is well borne by delicate patients : (3,) It improves digestion and causes no gastro-intestinal disturbances ; (4,) It has a favourable effect on general metabolism ; and (5,) It has no irritant effect on the kidneys and never gives rise to albuminuria, albumosuria, or peptonuria ; (6,) In cases in which albuminuria existed prior to the administration of somatose the albumin gradually disappeared from the urine during its administration.

Somatose is a good example of a meat nutrient containing albumin in a soluble and readily assimilable form. It is, however, somewhat expensive for general use. For a milk-albumin preparation see "Plasmon."

REFERENCES.—[1] "Lancet," Feb., 1895, p. 294 ; [2] Ibid., Sept. 30, 1899.

SPERMINE.

Considerable interest has been excited by the publication by Dr. Walter E. Dixon [1] of a paper on the physiological action of this substance. Whether it is responsible for the effects produced by injections of Brown-Séquard's fluid, and whether it will prove of any real value in the treatment of **Impotence** remains to be seen. It is employed in the form of the phosphate, and 0·07 gramme given subcutaneously is a safe dose for an adult. It is allied in action to choline. See "Choline and Neurine" ("Medical Annual," 1900, p. 18).

Schreiner [2] in 1878 discovered in sperm certain needle-shaped crystals which Charcot had observed for the first time in the blood of leucocythæmics, and Leyden had described as occurring in the expectoration of the asthmatic.

This substance "spermine" Schreiner examined, and gave it the formula C_2H_4N. Ladenberg and Abel [3] at first regarded it as ethylenimine, and later Kobert regarded piperazine ($C_4H_{10}N_2$) as dispermine, a polymeride.

Poehl [4] showed that the formula was $C_5H_{14}N_2$, and that it was quite distinct both from ethylenimine and piperazine. He was able to prepare it from almost every tissue of the body, and even found it in normal blood.

Dixon's experiments were performed on cats, the animals being anæsthetised in each case with A.C.E. The spermine was employed either as the phosphate dissolved in normal saline, with the addition of a little sodium carbonate to aid solution, or as the base spermine itself, prepared from the phosphate by the use of $Ba(OH)_2$.

Injected into the circulation spermine produces an immediate fall of pressure accompanied by slight cardiac sloughing. The pressure

rapidly rises to the normal level, and the heart quickly regains its previous rhythm.

This fall of pressure which follows the injection of spermine is accompanied by an initial shrinking of the intestinal volume, as shown by oncometer tracings ; before, however, the pressure recovers, dilatation of the vessels has commenced—as evidenced by the rise of the recording lever—and the ultimate effect is one of considerable vascular dilatation. The preliminary fall of the lever indicates the partial cardiac origin of the fall of pressure.

The volume of the testis immediately increases, the dilatation for for this organ being considerable.

Tracings of the volume of a kidney show different results ; here the kidney shrinks with the fall of pressure, and swells with the rise, behaving entirely passively.

On the frog's heart the effects are the same whether a 0·5 per cent. solution is simply dropped on, or whether it is perfused *in situ* through one of the hepatic veins with a 1 in 500 solution of spermine ; in both cases there is rapid and marked diminution in the force of the beat. This effect is antagonised by atropine. On the atropinised heart spermine still produces the same effect, and the original beat is again brought back by a further supply of atropine. This alternate augmentation and diminution in the force of the beat may be effected many times.

In mammalia, after section of both vagi or injections of nicotine, spermine still produces its typical effect. If the animal is injected with atropine in sufficient quantity to paralyse the vagi, the subsequent injection of spermine is very considerably modified. After such an injection the pressure does not fall, but either remains at the same level or even slightly rises ; the intestinal vessels, however, still show a marked dilatation, the effect in this respect being the same as without the atropine, except that there is now no initial fall of pressure.

The author arrives at the following conclusions :—

(1,) Spermine produces a fall of blood-pressure ; recovery is rapid, the normal level being soon reached.

(2,) This effect is largely cardiac, but is also partially due to dilatation of vessels in the splanchnic area. Injections of nicotine or section of both vagi do not influence this result. The effect of the use of atropine is to cut out completely the fall of pressure, without, however, influencing the splanchnic dilatation.

(3,) The vessels of the kidneys behave entirely passively with the blood-pressure.

(4,) The effect on the splenic vessels is masked by the constriction

of splenic muscle · a stimulant effect on the involuntary muscles of mammalian intestine as well as on the isolated strip of frog's stomach is also noticeable.

(5,) The testis becomes dilated.

(6.) Spermine produces a slight gradual rise in the body temperature. It is present in all tissues of the body, and in certain pathological conditions (leucocythæmia and some nervous diseases) is increased. It is present in the normal animal in greatest quantity in the testis and nervous tissue.

REFERENCES.—[1] "Jour. Physiol," vol. xxv., No. 5, Aug. 29, 1900; [2] "Liebig's Annalen," cxciv., 68; [3] "Chem. Berichte," xxi., 758; [4] "Deut. med. Woch.," 1892, No. 49; "Compt. Rend.," July 1892, cxxv., 959; "Zeit. für klin. Med.," xxvi., 1 and 2.

SULPHATE OF SODIUM.

W. J. Buchanan[1] speaks well of this drug in the treatment of **Dysentery.** His formula is :—

℞ Sodii Sulphatis ℥j | Aquæ Fœniculi ad ℥iv

Of this mixture ℥ss is given three or four times a day. Purgation should be free but gentle, and when bright yellow stools without a trace of blood or mucus are passed, the drug should be stopped, but resumed at once if blood or mucus reappear in the stools. It is usually found that after five or six stools all blood and mucus have disappeared from the stools, but in many cases they reappear in a day or so ; in such cases sodium sulphate must again be given.

REFERENCE.—[1] "Brit. Med. Journ.," Feb. 10, 1900.

SUPRARENAL EXTRACT.

W. H. Bates[1] speaks favourably of an aqueous extract of this body not only as an astringent but as a cardiac tonic. He states that as much as 2 lbs. of the fresh suprarenal extract have been taken in the form of aqueous extract without the production of any ill-effects. He employs it in a great number of diseases including **Hay Fever** and **Affections of the Nose and Throat.** In **Diseases of the Eye** he finds that it is useful in reducing the congestion of conjunctivitis, keratitis and iritis.

By this treatment in a recent case of corneal opacity the vision was improved from one-tenth to the normal in three months, and the corneal opacity disappeared. In cases of lachrymal stricture and abscess of the sac, in which an operation is usually required, the author has been able to cure the disease by suprarenal extract supplemented by other local treatment and without the use of the knife.

After operations on the nasal duct the extract is of service in lessening congestion during healing. In operations for the cure of lachrymal stricture, the extract is of benefit in securing a painless operation with cocaine and in lessening hæmorrhage. The author has in some cases been able to operate bloodlessly. The great value of the extract in lachrymal stricture suggested its use in the treatment of strictures in other parts of the body.

The internal administration of the suprarenal lessens congestion in diseases of the eye, although the results are not so decided as when the extract is used locally. In one case of chronic glaucoma the tension was lowered and the vision improved.

It is stated that **Urethral Strictures** were benefited by the astringent property of the extract, and that the hæmorrhage which usually occurs after internal urethrotomy was materially lessened by its local use.

The author considers that suprarenal extract is the best hæmostatic known.

Grünbaum[2] thinks that cases of **Hæmatemesis** might be benefited by the administration of suprarenal extract if the active principle were not absorbed sufficiently rapidly to cause a rise in blood-pressure, in which case the hæmorrhage would not be controlled.

The author made some observations on his own blood-pressure before and after doses of suprarenal, the hæmostatic properties of which had been tested. Oliver's sphygmodynamometer was used. The doses were 10, 20, and 30 grains ; the blood-pressure was taken every ten minutes for three hours after the dose. In no case was there an appreciable increase in blood-pressure—that is, an increase beyond that of experimental error, which is 4 mm. Hg. Another series of experiments was carried out on a woman who at one time was supposed to have Addison's disease. Her blood-pressure was normally 118 mm. Hg when not taking suprarenal. On being given 120 grains of suprarenal daily, no rise in blood-pressure occurred, although the treatment was continued for over a week. In one case a rise in blood-pressure was found after the administration of suprarenal extract. This was in the case of a pregnant woman who had some pigmentation, vomiting, great muscular weakness, and a very low blood-pressure. A rise from 75 mm. Hg to 91 mm. Hg occurred after the administration of suprarenal extract, which was not maintained on leaving off the drug. The negative results as regards the alteration of blood-pressure in normal individuals makes it probable that suprarenal extract is a good hæmostatic in cases of hæmorrhage from the walls of the alimentary canal or bladder.

REFERENCES.—[1] "Med. News," March 24, 1900; "Med. Chron.," August, 1900; [2] "Journ. Physiology," May 11, 1899; "Treatment," Sept. 28, 1899.

THYROID GLAND.

William Thorburn of Manchester[1] has published an able paper on the action of this substance. Certain propositions are now generally accepted:—

(1,) The thyroid secretes within its vesicles an "internal secretion," which is absorbed by its lymphatics or veins, and thence distributed throughout the body.

(2,) This secretion plays an important part in regulating the general metabolism, and appears to affect chiefly that of the nervous system, of the skin and its accessories, and of the growing bones.

(3,) A defective production or absorption of the secretion leads to a group of symptoms which we may classify collectively as those of "athyroidea."

(4,) The excessive absorption of the same secretion produces another group of symptoms called "hyperthyroidea," but the existence and significance of the latter is less certainly proved and less well known than is athyroidea.

(5,) The thyroid gland and its extracts yield certain chemical substances, which have as yet been but roughly isolated, and the most marked chemical character of which is the presence in them of iodine; we speak of this substance or substances as iodothyrin or thyroiodin.

(6,) Masses of thyroid gland whether implanted in the tissues or eaten and digested, extracts of the gland whether administered by the hypodermic syringe or by the mouth, and thyroiodin all alike diminish the symptoms of athyroidea and possibly exaggerate those of hyperthyroidea. Thyroiodin may thus be introduced into the economy in various ways, and however introduced, it plays its usual part more or less satisfactorily and normally.

Athyroidea is met with in two forms, experimentally in animals and pathologically in man. In animals it is produced by the removal of the whole or greater part of the thyroid gland. The simultaneous removal of the little parathyroid masses appears to be also requisite to its production. Experimental athyroidea of animals takes one of two forms—the tetanoid and the myxœdematous. The myxœdematous type is manifested by psychical apathy, muscular debility, degeneration of the connective tissue, coarsening of the skin and hair, tremors, dyspnœa, anæmia, lowering of temperature, convulsions or coma and death. In the tetanoid type muscular spasms are the prominent feature.

Athyroidea presents itself clinically in three forms: (1,) The traumatic, or cachexia strumipriva; (2,) The acquired or myxœdema; (3,) The congenital, or cretinism.

All three varieties are relieved and held in abeyance by the continued use of thyroid extract or thyroiodin.

Hyperthyroidea is less well-known, and its existence is not so well proved as athyroidea. Theoretically it might be produced in the following ways: (1,) By the administration of thyroid secretion or thyroiodin in excessive quantities; (2,) By the administration of iodide of potassium, which increases the amount of thyroiodin in the normal gland; (3.) By hypertrophy of the thyroid gland; (4,) By excessively rapid absorption of the secretion of the gland, even when the latter is of normal function.

The first would be an example of thyroid intoxication from without the body: the two last would be examples of auto-intoxication, and the second would occupy an intermediate position.

Intoxication from without is a clearly recognised condition. Some persons are made ill by eating sheep's thyroids sold as "sweet-bread," and the toxic symptoms produced by the therapeutic use of thyroid extract are also well-known, and are briefly as follows: A rapid, irregular and feeble pulse, rise of temperature, which may amount to hyperpyrexia, rapid loss of weight, facial twitching, gastro-intestinal disturbances and salivation.

Thyroid intoxication from the use of potassium iodide is less well-known, but French and Swiss physicians describe as "chronic iodism" a condition which is said to be analogous to Graves's disease. Unfortunately most of the subjects of this chronic iodism have been sufferers from pre-existing Graves's disease.

Hyperthyroidea as a result of overgrowth of the thyroid gland is a condition not yet absolutely proved to exist.

A further possible cause of hyperthyroidea is the too rapid absorption of secretion. Of this condition there are many recorded examples, all resulting from surgical opening up of the gland with outpouring and then absorption of its contained secretion. Partial thyroidectomy is adopted in cases of Graves's disease on the supposition that the latter is a hyperthyroidea and that it should be amenable to the removal of some secreting structure. The operation is sometimes followed by acute symptoms which may be taken to be those of acute auto-intoxication due to the released secretion being rapidly absorbed through the open lymphatics of the neck.

The author suggests that possibly thyroiodin acts as an antitoxin.

In favour of this theory the author adduces the following arguments:—

(1,) The best known toxic agents of vital origin are those of syphilis, the tubercle bacillus and the pyogenic bacilli, while pregnancy is well known to give rise to the production of important autotoxins.

(2,) In pregnancy the gland constantly undergoes enlargement. I suggest that this may be a compensatory hypertrophy to neutralise a toxic condition.

(3,) As to its action upon pyogenic organisms we know little, but acute inflammations and abscesses of the gland are certainly wonderfully rare when we consider its structure and relations, and it appears to be relatively immune to pyæmic metastases.

(4,) To tuberculosis its peculiar behaviour has been long known, and the following facts are established :—

(*a*,) In myxœdema and cretinism tuberculosis is a most common complication ; hence in athyroidea there is a general predisposition to tuberculosis.

(*b*,) In Graves's disease tuberculosis is most rare, so that hyperthyroidea possibly produces immunity.

(*c*,) Tuberculous deposits in the gland itself are also very rare, and when present the bacilli are very few or even undiscoverable.

Prof. C. A. Ewald[2] points out that organotherapy has its best support in the good results which have been obtained from the thyroid treatment of **Myxœdema of Adults**, the **Infantile Myxœdema,** the **Cachexia Strumipriva**, and the so-called **Idiopathic Struma;** besides these cases, the more or less good effects which could be obtained from the thyroid gland in the derangements of the metabolism and **Skin Diseases,** particularly in **Obesity** and **Psoriasis** deserve to be mentioned. In the case of **Goitre** in young persons the author has almost invariably obtained good results from the thyroid treatment.

It is, he thinks, only a question as to whether the whole gland in its various forms of administration *i.e.*, fresh, dried, or extracted, is to be preferred before its manifold derivatives, such as Iodothyrin, Thyroiodin, Thyroprotein, Thyroglandulen and Thyrocolloidin, and which of these contains the true specific of the gland.

L'Mabille[3] reports that thyroidism can to a great extent be limited, and even prevented by the simultaneous use of arsenic. Five observations on the human subject, and a series of experiments on the dog showed that thyroidism did not occur when arsenic was used at the same time ; or that it could be checked by means of arsenic when it had already become manifest : moreover the loss of weight which supervened after the use of the thyroid gland was either less or not observed.

In the case of a woman, forty-two years old, affected with goitre, iodothyrin was administered for ten days, the daily dose varying from 2 to 7 decigrammes. The following symptoms developed: marked palpitations, neuralgic pains in the back, and nervous trembling. The dose of iodothyrin was reduced and the symptoms disappeared. At this stage arsenic and thyroiodin were simultaneously administered: the daily dose of the thyroiodin amounting to 8 decigrammes, and that of the arsenic to 12 drops of Fowler's solution; no bad after effects occurred. When the use of the arsenic was discontinued for three days the after-effects came on again, and disappeared for a second time when the arsenic was recommenced.

In conclusion the author states that the addition of arsenical preparations in relatively large doses permits the toleration of thyroid extract, which is often borne so badly when given alone.

Oswald[4] points out that while it is now hardly contested that the functional activity of the thyroid gland is indispensable for the health of the body, and that while the ingestion of gland substance shows that activity depends on material contained and manufactured in the gland itself, we know neither the nature of the function nor the way in which it works. Iodothyrin has been supposed to be the bearer of the specific qualities of the gland, but is not as such present in the gland.

Baumann obtained it in considerable quantities from the albuminous matter of the gland and suggested its existence therein as thyro-iodoglobulin or thyro-iodalbumin.

The author has endeavoured to isolate and ascertain the qualities of the iodine constituent of the thyroid in the form it has in the gland. All matter containing iodine can be extracted by normal salt solution, and all such matter is albuminous, for the de-albuminised extract is free from iodine. From the extract can be isolated two albuminous substances, different in composition, properties, and effects. Half saturation with ammonium sulphate precipitates a body resembling globulin, but again precipitated from salt solution by acetic acid, and soluble in excess; this body called thyreoglobulin contains 1·6 per cent. of iodine. By completely saturating the filtrate from the first precipitate a second albuminoid is precipitated free from iodine, but containing phosphorus; it is in small quantity compared with the thyreoglobulin and is a nucleo-proteid. No other albuminoid is contained in the extract. The thyreoglobulin constitutes about 10 per cent. of the gland. The de-albuminised extract is non-effective. The thyreoglobulin was found to have the same

influence on the excretion of nitrogen in animals as the entire gland. The nucleo-proteid had no such effect, and the author concludes that the iodine compound thyreoglobulin is the absolute and only bearer of the specific influence of the thyroid gland on metabolism. His view is confirmed by its action in two cases of myxœdema. He obtained from thyreoglobulin a product resembling iodothyrin, but containing 14·3 instead of 9·3 per cent. of iodine.

Thyroid has been employed with a certain amount of success in the treatment of insanity.

Thyroid extract was first administered in **Mental Diseases** in two cases of myxœdematous insanity by J. Macpherson,[5] and by Melville Dunlop,[6] who each obtained a cure both of the myxœdema and the insanity. In 1894, M'Claughray[7] exhibited thyroid in two cases of insanity with goître, and obtained amelioration of the mental condition ; and in 1895 Reinhold[8] in twelve cases of insanity with goître obtained improvement as regards the goître only.

In 1893, however, L. C. Bruce and S. R. Macphail[9] found that they could produce a feverish condition in their insane patients by giving thyroid extract in full physiological doses, and hoping to simulate Nature's occasional method of cure of insanity by an attack of fever, they applied this method of treatment to the insanities generally. Their efforts met with such success as to attract the notice of alienists generally. Bruce[10] in his subsequent papers was inclined to attribute the beneficial effects of thyroid in insanity not only to its general stimulation of nutrition as after fever, but also to a specific excitant action on the brain cortex. Since the original papers of Bruce and Macphail many physicians have published their results of thyroid treatment in insanity. The recoveries vary from 0 to 50 per cent. in the different records.

Mabon and Babcock[11] have given a summary of over a thousand cases collected from the literature of the subject and other sources.

By far the most complete account of the subject will be found in a paper by C. C. Easterbrook[12] of the Morningside Asylum, Edinburgh. The author administered thyroid extract in one hundred and thirty-nine cases of insanity, a larger series than has hitherto been published by one individual. All the patients (eighty-five females and forty-five males) were suffering from insanity which at the time was stationary or chronic or incurable.

Of the one hundred and thirty patients so treated, twelve recovered, twenty-nine were improved, and eighty-nine were unimproved. Twelve recoveries out of one hundred and thirty cases is just over 9 per cent. If however, obviously incurable cases were eliminated,

the results gave 12 per cent. of recoveries for all cases of insanity which were intractable by ordinary methods.

REFERENCES.—[1] "Med. Chron.," June, 1900; [2] "Die Therapie der Gegenwart," No. 9, 1899; "Berlin. Klin Woch.," No. 5, 1896; [3] "La Sem. Méd.," 1899; "Les Nouv. Rem.," Nov. 9, 1899; [4] "Münch. med. Woch.," 1899, xxxiii.; [5] "Edin. Med. Journ.," May, 1892; [6] Ibid., May, 1893; [7] "Journ. Ment. Sci.," Oct., 1894; [8] "Brit. Med. Journ.," Feb. 15, 1896; [9] "Lancet," Oct. 13, 1894; [10] "Journ. Ment. Sci.," Jan. and Oct., 1895; [11] "Amer. Journ. of Insanity," Oct., 1899; [12] "Brit. Med. Journ.," Sept. 22, 1900.

TOXINS AND ANTITOXINS.

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The Source of Antitoxin.—Ehrlich's [1] "Lateral Chain Theory," originally published in 1897, is steadily gaining ground. According to this view, when the stimulation exerted upon the body cells, by a toxin is slight, the effect is simply a re-arrangement of the molecules of the protoplasm resulting in an increased resistance corresponding to the effect known as vaccination. If, however, the stimulus is increased, or caused by toxins of certain other classes, the molecular change is somewhat different and results in the liberation into the circulation of molecular chains of a combining substance known to us as the antitoxin. In the early stages of immunisation just enough of this combining substance is discharged to neutralise the toxin received, but under the stimulation of progressive immunisation, its elimination by the cells is continuous and consequently soon in excess of the toxin to be neutralised and confers the antitoxic property to the serum of the immunised animal.

Wassermann,[2] in studying the particular cells that might have to do with the liberation of the antitoxin, finds that in the case of pneumococcus antitoxin, the chief formation occurred in the *bone marrow*. Experiments were made upon rabbits, and their bone marrow was found to possess two and one-half times the protective power of the blood serum. Of the lymphatic organs the thymus contained some, the spleen and lymph nodes decidedly less protective properties. Wassermann suggests that as these organs contain some protective power, they may act as reservoirs in which it is stored. The kidneys, lungs, brain, liver and ovaries contained no antitoxin.

The amount of antitoxin in the blood seems to depend entirely upon the discharge from the cells, and can be increased by agents stimulating cellular activity. Solomonsen and Modsen found that in animals with active immunity, the administration of pilocarpine considerably increased it.

In a paper read before the International Medical Congress at Paris, Prof. Ehrlich gave a summary of his views on toxins and antitoxins. For this report, which is too long to reproduce here, see "Lancet," Aug. 18, 1900, p. 527.

Interaction of Toxin and Antitoxin.—Lisle,[3] commenting upon the direct chemical interaction of toxin and antitoxin, recalls the observation of Wassermann that tetanus toxin is neutralised by admixture with freshly comminuted cerebral matter, and suggests that the reason that tetanus follows the injection of a fatal dose of toxin in spite of previous large intravenous injection of cerebral matter depends upon the inability of the toxin introduced at one place to come into contact with sufficient of the cerebral matter, already in the circulation, to chemically neutralise it.

Action of Digestive Juices.—The action of the digestive juices on bacteria and their products has attracted the attention of various observers.

Paltschikawaki[4] has studied the effect of the purchasable digestive ferments upon the toxins and antitoxins. The toxin was destroyed, the antitoxin unaffected by them. The opinion is expressed that as the antitoxin is not destroyed by the juices of the alimentary canal, it probably meets with some tissue juice or glandular secretion by which it is destroyed after absorption.

Carrier[5] arrives at a somewhat different conclusion. He finds that both toxins and antitoxins are destructively acted upon by the digestive ferments. The following are his conclusions :—

Toxins.—Ptyalin totally destroys the activity of tetanus toxin and venin.

Gastric juice, in considerable relative amounts, attenuates and often destroys them.

Bile destroys or attenuates them, but a considerable quantity is required for the purpose.

Pancreatin attenuates tetanus-toxin without destroying it. In large amounts it may destroy it. Venom is easily destroyed by pancreatin.

Antitoxins.—Ptyalin does not modify antitoxic serum. Gastric juice exerts very little effect upon the serums. Antivenomous serum is weakened a little.

Bile does not modify any of the antitoxins studied.

Pancreatin modifies the serum strongly and ultimately destroys it.

Succus entericus also seems to be capable of destroying the antitoxins.

The intestinal bacteria, and the intestinal epithelium also act destructively upon antitoxins, and seem capable of removing all their activity.

The Antitoxins in Specific Disease.—For convenience of reference the various antitoxins are arranged under the head of the diseases for which they are principally employed.

Anthrax.—Sobernheim[6] found that the immunity to anthrax following the use of anti-anthrax serum, as suggested by Marchaux and Sclavo, was of very short duration. If, however, the passive immunity thus conferred could be combined with the active immunity of vaccination the results might be better. To determine this he, therefore, injected sheep with mixtures of attenuated cultures and anti-anthrax serum and found that after one and one-half months they retained a pronounced degree of immunity not only to subcutaneous, but also to intestinal infection. He could give them injections of the entire spore—containing bacterial mass from two to three days old agar-agar cultures of virulent anthrax bacilli—without danger of infection.

Diphtheria.—Most of the literature of this subject refers to the statistical evidence for or against its use. (See "Diphtheria Antitoxin," page 17.)

Arloing[7] has made an interesting and thorough study of the physiological action of normal horse serum, antitoxic serum, and diphtheria toxin. His results show that :—

(1,) The serums of the normal horse and of horses immunised to diphtheria have toxic properties.

(2,) The toxicity of the serum manifests itself in the dog in doses incomparably weaker than those affecting rabbits.

(3,) The toxicity is not constant.

(4,) The normal and antitoxic serums possess the same peculiarities.

(5,) A dose of the serum capable of producing immediate death when injected into the vein of a dog produces only a slight ephemeral trouble when injected into the subcutaneous cellular tissue.

(6,) The daily injection of small doses of the serums into the subcutaneous cellular tissue, if continued for a long time, causes malnutrition and checks the development of young animals.

(7,) The subcutaneous injection of a therapeutic dose has never provoked a sensible loss of weight.

(8,) The therapeutic dose never occasioned albuminuria.

(9,) It may, however, cause variations in the total quantity of urine, as also in the quantity, both absolute and relative, of the urea, phosphates and chlorides.

(10,) The modifications of the urine differ from those occurring after the injection of diphtheria toxin.

(11,) There are distinct analogies between the thermic, circulatory

and respiratory changes produced in the dog by the intravenous injection of diphtheria toxin and the antitoxic serum.

(12,) A most minute study of the symptoms fails to establish any difference between normal and antitoxic serums.

(13,) The antitoxic power of the serum is not manifested except in the presence of the toxin *in vitro* or in contact with the Klebs-Löffler bacillus.

(14,) In the mixture *in vitro* the properties of the toxin and serum are reciprocally neutralised.

(15,) The occurrence of neutralisation is established by the effect upon the circulation, upon the respiration, upon the temperature, and upon the urinary secretion of the subject receiving the mixture injected into the subcutaneous tissue.

(16,) If the serum is administered after the appearance of symptoms caused by the injection of toxin into the blood, the toxic symptoms are added to those of the same nature depending upon the toxin.

(17,) The influence of the serum upon the organism with diphtheria depends not upon an antagonism, but a synergy of the toxin and antitoxin.

(18,) The action of the serum in the organism is not necessarily similar to its action *in vitro*.

(19,) The neutralisation *in vitro* probably depends upon chemical reactions.

(20,) These reactions bring about the formation of new products differing from the serum and from the toxin.

Dysentery.—Shiga[8] publishes a report on the treatment of dysentery with serum from animals immunised to his bacillus dysentericus.

The serum is prepared by immunising large animals in the usual manner. Shiga found that sheep quickly became immune, requiring but one year's treatment. These herbivorous animals stand the immunisation well and are not made ill by the injections. The horse, on the contrary, is sensitive to the cultures, re-acts with such manifestations as fever (40° C.), malaise, loss of appetite, etc. It requires about two years to immunise a horse, but its serum is much stronger, and more useful than that of the sheep. The serum is administered to man in divided doses amounting to from 20 to 40 c.c. in twenty-four hours.

The author up to November 1, 1899, had treated with serum cases as follows :—

1898, in Laboratory Hospital,	65	cases,	death-rate,	9	per cent.
1899, ,, ,,	91	,,	,,	8	,,
1899, ,, Hirowo ,,	110	,,	,,	12	,,

During the same period of 1899, there were under ordinary treatment in Tokoyo :—

At Honjo Hospital,	166 cases,	death-rate,	37·9 per cent.
At Hirowo ,,	53 ,,	,,	37·7 ,,
At Komagome ,,	398 ,,	,,	34·7 ,,
In Private Houses	1,119 ,,	,,	28·5 ,,

The results seem to have been extremely satisfactory.

Enteric Fever.—The anti-typhoid vaccination of Prof. Wright has met with considerable experimental investigation.

Wilson [9] speaks favourably of the method for prophylaxis and thinks that the vaccine, if it does not render the typhoid bacillus innocuous, it at least favourably modifies an attack of the disease.

Marsdan [10] recommends the use of the vaccine for prophylaxis in nurses and others exposed to infection while caring for typhoid patients.

Jez [11] advocates a peculiar method of treating typhoid fever. He immunised guinea-pigs to increasing intra-peritoneal injections of the typhoid bacillus until marked tolerance had been established, after which the animals were killed, the organs crushed, and an extract made by macerating them in a mixture of sodium chloride, alcohol, glycerin, and a little carbolic acid. The extract was administered to eighteen patients, with typhoid fever, in doses of a teaspoonful to a tablespoonful every two hours, and marked improvement was noted in all the cases. No unpleasant secondary results were observed.

Wasserman [12] has made some interesting discoveries upon intermediate bodies that may be necessary to complete the action of immune serums. He found that when a guinea-pig was injected with a culture of typhoid bacilli and then with anti-typhoid serum, these bodies were not protected, but if, in addition to the anti-typhoid serum they were given 4 c.c. of normal cow's serum, they suffered no ill-effects not explained by the large dose of cow's serum.

The author interprets this as signifying that the end-bodies which combine with intermediate bodies in the serum are not present in sufficient amounts to enable the immune serum to act protectively by itself. A considerable quantity of simple serum must therefore be added to supply the deficiency.

The observations of Wasserman accord with those of von Dungern[13] and Ehrlich, and Morgenroth [14]. The former in studying the hæmolytic action of the blood found that in order that the blood serum of one animal should dissolve the red blood-corpuscles of another species, the blood must contain a specific substance known as "immunkorper," and a *complement* which is non-specific and present in

normal serum. The complement is the hæmolytic agent, but is only able to operate in the presence of the immunkorper.

Ehrlich and Morgenroth point out that the solvent action is not peculiar to blood corpuscles, but occurs after the injection into the body of leucocytes, epithelium, spermatozoa, etc. When any of these cells taken from one animal are injected into another, a speedy absorption follows.

The facts are of considerable pathological significance, as cells of various kinds are frequently absorbed in the body—blood corpuscles after internal hæmorrhages, lymphatic cells when lymphatic tumours disappear under the administration of arsenic, etc. The solvent action depends upon a body which they call *hæmolysin*, which is developed in the blood of one animal when blood corpuscles of another animal are introduced into it. The hæmolysins can be divided into such groups as *heterolysins*, when the stimulus consists of corpuscles of an animal of different species ; *isolysins*, when of animals of the same species ; and *autolysins*, when of the animal's own corpuscles.

The hæmolysin is dissolved in the plasma and is probably not simple in structure but composed of an "immunkorper." and a "competent," or "adiment." The "adiment," which corresponds to the *complement* of von Dungern, is a ferment-like body normally present in the serum and possessed of an affinity for blood corpuscles and for the immunkorper, in the absence of which it is inactive.

Ehrlich says it is *a priori* unreasonable to suppose that since the injection of blood corpuscles from another species of animal produces a hæmolysin, the blood of the same animal will produce a hæmolytic body, as if it did its own corpuscles would be dissolved.

By experiments upon goats the formation of isolysins was secured, so that the serum of one goat was active in its solvent action upon the corpuscles of other goats. Autolysins, dissolving the animal's own corpuscles were not, however, formed. The explanation of the absence of the autolysogenic power is supposed to depend upon the absence of the particular lateral chain furnishing the necessary adiment or compliment, or, as Ehrlich calls these particular binding chains, "receptors."

Bosc, of Montpellier, advocates a daily dose of from 800 to 1,000 c.c. of artificial serum given subcutaneously in the treatment of enteric fever. His paper was read before the International Medical Congress at Paris, August, 1900.

Leprosy.—Carrasquilla's leprosy serum, which is prepared by withdrawing blood from lepers, allowing the serum to separate and then

injecting it into horses, mules and asses, bleeding them after they have received a number of injections, and utilising their serum for the treatment of the disease.

Thompson [15] has treated one hundred cases with excellent results.

Tiswell,[16] using it from August, 1897, to June, 1898, concludes that it produces not the least improvement, but on the contrary, the disease continues to progress.

Plague.—Lustig and Galeatti [17] continue the praise of their method of preventive inoculation against plague. The "vaccine" is prepared as follows: "We cultivate the plague bacilli in large glass dishes containing a stratum of common agar-agar. After some days' development we scrape off with a bone spatula the colonies which have formed, and dissolve the mass in a 1 per cent. solution of caustic potash. We then add a very dilute solution of either hydrochloric or acetic acid until a slight acid reaction is introduced, and we collect in a filter the precipitate formed. After careful washing the precipitate itself is dried *in vacuo*, and in the presence of sulphuric acid, or else immediately dissolved in a 0·5 per cent. solution of carbonate of soda. The dried substance, which has lost none of its chemical and biological properties, is easily re-dissolved in a solution of soda when required. The solution of this substance may also be passed through a Chamberland filter for greater sterility. The precipitate is composed solely of nucleo-proteid in a state of relative purity."

The preparation is given hypodermically in doses of 3 mg., three doses about seven days apart being necessary to produce perfect immunity.

The contribution closes with the following summary :—

(1.) The efficacy of our method of preventive inoculation against the plague by means of the nucleo-proteid extracted by us from the plague bacilli has been proved from the experiments made on animals —rats, rabbits, guinea-pigs, and monkeys.

(2.) The immunising substance used by us is innocuous in the case of man ; no troubles of any kind arise from its use, either local or general.

(3.) If the cultural liquids used in their entirety possess an immunising power, they owe this power to the nucleo-proteid which they contain and we have isolated.

(4.) The advantages of using an active substance isolated and pure in place of liquids (cultures), which contain this substance, mixed, however, with heterogeneous elements of different kinds, are at once evident.

(5.) The advantages which our method of inoculation possesses in comparison with Haffkine's method are the following :—

(*a*,) In using Haffkine's liquid along with the active substance are injected other toxic substances, which produce a reaction harmful to the organism and useless for producing immunity ; with the use of the pure nucleo-proteid prepared by us, all the reaction produced is specific and useful for the production of immunity.

(*b*,) Haffkine's liquid has a very low toxic and immunising power, since it has to undergo heating, so that the active substances contained in the cultures are, to a certain extent, altered. With our method this does not take place, and the active substance retains its highest immunising power.

(*c*,) Haffkine's liquid easily becomes contaminated, and there is no guarantee of the sterility of each separate bottle, while the active substance used by us is prepared in a thoroughly sterilised condition, and is perfectly preserved in the dry state.

(*d*,) It is impossible to determine an approximate dose of Haffkine's liquid ; the nucleo-proteid prepared by us can be administered in perfectly well-defined doses.

Mallannah [18] has studied the constituents of Haffkine's anti-plague vaccine. The sediment found on a Pasteur-Chamberland filter was found to be made up of bodies of dead bacilli. It was proteid in reaction and protected rabbits in doses of 300 mg. The filtrate, a clear fluid, also gave proteid re-actions and possessed well-marked protective power even in small doses. It is possible to isolate, after Brieger's method of preparing tetanus toxin, the immunising substance from Haffkine's fluid in a more or less pure condition, and this immunising substance does not respond to any of the known proteid reactions, and possesses well-marked protective power against rabbits in doses of 100 mg. This immunising substance is grey and amorphous, and is soluble in water. It might be termed extra-cellular, as it is found dissolved in the surrounding media. The immunising substance present in the sediment might be called intra-cellular, as it is found in the bodies of the dead bacilli. The extra-cellular immunising substance is found in the bodies of the cells (plague bacilli), and is then thrown into the surrounding media, and this substance is formed most probably when the plague bacilli disintegrate. Plague bacilli produce besides the immunising substance a proteid which produces pus, and this proteid is found in the bodies of the dead bacilli.

The report of the Indian Plague Commission [19] upon Haffkine's anti-plague inoculations throws additional light upon the accumulated evidence in favour of this prophylactic measure.

Pneumonia.—Joseph McFarland and C. W. Lincoln [20] publish a preliminary note on anti-pneumococcus serum, in which they corrobo-

rate the work of Pani, De Renzi, and Washbourne, and by progressive immunisation of horses by cultures of the pneumococcus secure a serum of which small doses perfectly protect rabbits against fatal pneumococcic infection.

Fanoni[21] reports upon six cases of pneumonia treated with Italian anti-pneumococcus serum with excellent results.

J. C. Wilson, in a paper read before the American Medical Association in June, 1900, was not able to prove that a series of cases of pneumonia which he had treated with anti-pneumococcus serum, had done better than a parallel series treated by other methods.

An interesting observation by Bessone[22] is to the effect that *diphtheria antitoxic serum* hastens the crisis and makes the complications of pneumonia less frequent. He does not regard the action as specific.

For detailed information on the subject of anti-pneumococcic serum see "Medical Annual," 1900. p. 42.

Streptococcus Infection.—It is well known that while some of the antitoxins, as that of diphtheria, are specific in their action, others are to a limited extent interchangeable. This seems to be true for the most part of those whose stimulating toxins or bacteria have an affinity for identical or closely related parts of the body. This non-specific action may account for the interesting observations of C. P. MacNabb,[23] who used the anti-streptococcus serum with probable benefit in two cases of **Cerebro-Spinal Meningitis**, and of Elder,[24] who saw marked results follow the use of the serum in **Pernicious Anæmia.**

For further observations on this subject see "Anti-streptococcic Serum," p. 15, and "Medical Annual," 1900, p. 43.

Snake Bite. (See "Antivenene," p. 19).

Tetanus.—R. Abbe[25] has employed the intra-cerebral administration of antitoxin in tetanus with very satisfactory results, and thinks this mode of treatment a marked advance.

Joseph MacFarland and E. M. Rauck,[26] in addition to a synopsis of the method of manufacture of tetanus antitoxin, give some facts of interest and importance in regard to its use for prophylaxis and treatment. The studies were made upon several hundred horses used for the production of various immunised serums in one of the large laboratories of the United States. The horses because of the constant manipulations frequently become infected with tetanus, and in 1897 and 1898, when scrupulous cleanliness and disinfection were the only precautions employed to prevent the disease, the death-rate varied from 8 to 10 per cent. During 1899 nearly two hundred horses were subjected to systematic immunisation with tetanus antitoxin, and in spite of otherwise similar conditions the death-rate descended to 1 per

cent. While the antitoxin thus affords almost perfect protection against the disease, it seems to be of doubtful use in treatment. To one horse, whose treatment was begun early in the course of his tetanus infection, a total of 720 c.c. of antitoxin was administered without visibly altering the progress of the case to its fatal termination.

E. von Leyden and Ferdinand Blumenthal call attention to the fact that the tetanus bacillus is very extensively distributed. It is found not only in garden soil of nearly all lands, in street dust, in splinters of wood, but occasionally in mud from the seashore, in the fæces of horses and men, and even in the leech. If infection only rarely occurs, the reason is that the bacillus develops only under certain conditions. As regards treatment with antitoxin, it was determined by experimental inquiry at the Frankfort Institute that the Behring-Kuhn preparation was the best. Both in horses and in the adult human subject, on the first appearance of symptoms of the disease, a whole phial of the antitoxin should be at once injected subcutaneously. It is advisable to inject the contents of a phial on each of the two following days. In the case of children, half the quantity should be injected and the remainder the following day. Syringes holding 10 c.cm. should be used ; 5 to 10 c.cm. should be injected into the chest, the back, the skin of the abdomen, and the remainder into the lower extremities. The price of one phial, containing 250 units of strength, is fifteen shillings. When the trismus is pronounced medicaments should be administered per rectum or subcutaneously. It is best to combine serum treatment with morphine. Large doses of bromide of potassium are also recommended.

An abstract of this paper is given in the "Medical Press and Circular," Sept. 26, 1900. (See also "Medical Annual," 1900, p. 44).

Tuberculosis.—(For abstract of recent literature see "Tuberculin R.," p. 74).

Maragliano's anti-tubercle serum ("Medical Annual," 1897, p. 14) continues to attract attention, and at the meeting of the International Congress on Tuberculosis, held in Naples, April 28, 1900, Prof. Di Renzi stated that it is able to work such improvement in mild cases that the patients no longer re-act to tuberculin—a proof that they have regained a remarkable resisting power to the specific tubercular poison.

Yellow Fever.—The following is an abstract of the report of the U.S. Commission of Medical Officers appointed to investigate the cause of yellow fever. It was published at Washington, 1899 :—

The action of serums may be broadly divided into three classes : (1,) Those which prevent infection by their influence on the economy,

stimulating the leucocytes to increased activity against the living germ (phagocytosis); (2.) Those which, in addition to the above property, stimulate the whole cell economy to the production of an antitoxin, or supply in themselves an antitoxin for the neutralisation of the toxins produced by growing and multiplying organisms; (3,) Those whose power is exercised directly upon the micro-organism itself, having no power to stimulate phagocytosis or to supply or cause the elaboration of an antitoxin—the so-called "alixins." To this class it would seem that the "serum antiamaryll" must be relegated.

It was comparatively an easy matter in the preparation of the antipest serum at the Institute Pasteur to prepare a serum which would protect mice, rats, and guinea-pigs against a mortal dose of a culture of bacillus pectis, but a far different matter to prepare one which would protect similar animals against toxins of the disease, isolated and administered, or which would prevent a fatal issue when the malady was once established by the living organism. An antipest serum, therefore, was not pronounced effective until it had not only proved its efficacy against a mortal dose of the live organism, but *until a dose of* 0·1 *to* 0·2 *c.c. would protect a mouse against a four times mortal dose of the precipitated toxins.* This requirement may seem to be exalted, but is just and proper, and until a serum against yellow fever somewhat approaching these requirements shall be produced, the question must be regarded as still unsettled. The serum failed signally to protect an animal against toxin, and consequently it cannot be claimed to be a true antitoxic serum or antitoxin.

REFERENCES.—[1] "Klin. Jahrbuch," 1897; [2] "Deut. Med. Woch.," No. 9, S. 141, 1899; [3] "New York Med. Jour.," May, 19, 1900; [4] "Botkin's Krankenhauszeitung," 1898, No. 42; [5] "Ann. de l'Inst. Pasteur," May 25, 1899, p. 435; [6] "Berlin. klin. Woch.," 1899, No. 13; [7] "Arch. internat. de Pharm.," 1899, vol. v., p. 437; [8] "Public Health Reports, U.S.A.," Jan. 5, 1900, vol. xv., No. 1; [9] "Brit. Med. Jour.," April 28, 1900; [10] Ibid.; [11] "Wien. klin. Woch.," Feb. 18, 1899; [12] "Deut. Med. Woch." May 3, 1900; [13] "Munch. Med. Woch.," May 15, 1900; [14] "Berlin. klin. Woch.," May 21, 1900; [15] "Lancet," Feb. 17, 1900; [16] Ibid.; [17] "Brit. Med. Jour.," Feb. 10, 1900; [18] Ibid., May 12, 1900; [19] "Lancet," Feb. 24, 1900; "Brit. Med. Jour.," Feb. 24, 1900; [20] "Jour. Amer. Med. Assoc.," Dec. 16, 1899; [21] "New York Med. Jour.," Aug. 26, 1899, vol. ii., p. 302; [22] "Gaz. Med. di Toreno," 1898, No. 47; "Cent. für Inner. Med.," Feb. 3, 1900; [23] "New York Med. Jour.," Feb. 25, 1899; [24] "Lancet," April 28, 1900; [25] "Ann. Surg.," March, 1900; [26] "Jour. comp. Med. and Vet. Med.," Oct. and Nov., 1899.

The articles on "Sera" and "Toxins and Antitoxins" in the "Medical Annual" for 1900 should also be consulted.

TUBERCULIN R.

In the "Medical Annual" for 1900[1] it was stated that comparatively little had been heard of this remedy of late, and that the great drawback to its employment in cases of **Phthisis** was the absurdly high price at which it was sold. It is probable that in England at the present time very few medical men habitually use it, but one or two interesting papers on the subject have been published during the the last eighteen months.

Dr. Heron,[2] in opening a discussion on Serum Therapeutics and Antitoxin Treatment at the Medical Society of London, referred to the experience which he had recorded before the Society in 1891 on the treatment of tuberculosis and lupus by tuberculin, observing that there was no important statement therein contained which he would wish to withdraw at present. He recalled that though all the cases of lupus had improved under treatment, they had all relapsed, while in respect of the thirty-two lung cases the latest information he had was that eight had died, one remaining at work till 1897 when the disease recurred, ten were still in fair health, and he had lost sight of the remaining thirteen. In a lecture delivered in 1898, he had referred to nine cases of lung tuberculosis and one of lupus treated by the new tuberculin. Of the nine, two had died, but both were from the first hopeless cases; one indeed was evidently dying, and *post mortem* they found an absence of recent tuberculosis which was interesting in view of Virchow's pronouncement that the old tuberculin was apt to be followed by excavation of the diseased part of the lung. In no case in his experience had any untoward results followed the treatment from either the old or the new serum. He had made over 2,000 injections at the hospital without so much as a superficial abscess. The remaining seven did fairly well in hospital, and left at their own request. As recently as last summer, four of these seven patients were at work in fairly good health. The lupus patient had had no recurrence for eighteen months after leaving hospital. During the past year he had had ten cases of pulmonary tuberculosis under treatment by the new serum; in two the treatment was discontinued because they had high temperatures which remained high, and in such cases they might take it that there was a mixed infection. Others came up at intervals for the injections, all of whom had improved in health. He recalled that Koch had laid it down that the cases most likely to benefit from the treatment were those in which the temperature had not risen above 99·4°, and in which only a small portion of one lung was affected, and not one of his last ten cases came under this category.

T. McCall Anderson, of Glasgow,[3] still speaks favourably of tuberculin in the treatment of phthisis. He points out, however, that in view of economy of material, especially in reference to the more expensive T.R. preparation, the process of diluting the remedy so as to meet the requirements of varying doses is somewhat troublesome. He says: "With regard to the preparation of tuberculin to be preferred I must speak with some reserve, for while I have had much experience in the use of the old I have necessarily had comparatively little of the new tuberculin. I am inclined to think, however, that the latter is the safer of the two, because, in appropriate doses, it produces much less reaction, but for that very reason it is not so reliable as the former as a diagnostic test; and a serious objection to the new tuberculin is its cost, particularly when the higher doses are reached, which precludes its use amongst the poor except in the case of those received into hospital. The initial dose of the old tuberculin is from $\frac{1}{2}$ to 1 cubic centimètre of 1 in 1000, that of the new 1 cubic centimètre of 1 in 5000; while the final dose of the first is 1 cubic centimètre of 1 in 10, and of the second 2 cubic centimètres undiluted. Now the final full dose of the old tuberculin costs less than a penny, while that of the new is seventeen shillings, so that it is mainly a luxury for the rich."

Murrell[4] has published three cases of phthisis treated at the Westminster Hospital with injections of Tuberculin R. His experience, although limited, has been most unfavourable as regards the curative action of this remedy. In not one of the cases was there the slightest sign of improvement. One man from Sept. 9 to Dec. 1st had 20 injections, the dose being gradually increased from $\frac{1}{5000}$ to 5 mg. The reaction was always slight and was often absent. He points out that it is even more important to publish unsuccessful cases than to record those in which improvement has resulted, and especially is this so in connection with new methods of treatment. Ten years have elapsed since the introduction of Koch's tuberculin, and yet it has not attained a recognised position in the therapeutics of pulmonary phthisis. It appears to be of very little use in mixed infections or in advanced cases, and the striking beneficial results detailed by McCall Anderson are certainly exceptional. Professor Anderson gives his patients large doses of cod-liver oil (3 ounces a day), and this may account in part for the difference. The reaction produced by Koch's original tuberculin was certainly of some diagnostic value, but with the new tuberculin there is very slight reaction and therefore its use in diagnosis is less. It may be that if cases were carefully selected and only patients in a very early stage treated

by this method better results would be secured. The irritation produced at the seat of infection is often a source of trouble and inconvenience to the patient. The expense is a serious consideration, and in hospital practice a physician hesitates to recommend his house committee to sanction the employment of a remedy which runs up to seventeen shillings a dose. An endeavour was made to get it prepared in England on more reasonable terms, but it was stated that although the formula was published the exact details were not known. To all intents and purposes it is still a secret remedy.

REFERENCES.—[1] "Medical Annual," 1900, p. 3; [2] "Brit. Med Jour.," Oct. 14, 1899; [3] "Lancet," June 16, 1900; [4] Ibid., July 14, 1900.

UROTROPIN.

This name (*οὖρον*, urine; *τρέπειν*, to change) has been given to the chemical substance hexamethylentetramin (hexamethylenamin). It is prepared by the action of formalin on ammonia.

It was introduced into medical practice by Dr. Arthur Nicolaier[1] as a urinary antiseptic. It was soon found to be of value in checking the decomposition of the urine in cases of **Ammonical Cystitis,** the effect being due to the liberation of free formalin after its passage into the urine. In the acid cystitis due to bacillus coli, it is almost without effect, so that it cannot be regarded as a specific for all forms of urinary infection.

The best test for urotropin is a solution of bromine. When bromine water is added to an aqueous solution of urotropin an orange coloured precipitate is produced which dissolves on the application of heat. This reaction can be obtained with very dilute solutions of the drug, and is given by the urine after very small doses have been taken. A saturated solution of bromine answers best (bromine 10·0, water 90·0), and a few drops of the reagent added to the urine of a patient taking urotropin produces an orange yellow precipitate.

Horton-Smith[2] as the result of his experience states that it is most useful in the treatment of **Enteric Fever**. He considers that it is indicated whenever a urinary complication, due to the typhoid bacillus, is met with. He thinks that the drug should be given in ½ drachm doses daily in all cases of typhoid fever. In this dose it produces, even when taken for a prolonged period, no ill-effect beyond some urethral pain if the urine is allowed to become concentrated.

Briefly the action of urotropin is: (1,) To check the development of micro-organisms; (2,) To dissolve uric acid at the temperature of the body.

Large doses of the drug can be given to animals without bad effects.

At the temperature of the body, the urine after the use of urotropin has the power of arresting the development of micro-organisms.

Mark Wyman Richardson[3] has used urotropin as a urinary antiseptic, especially in cases of enteric fever.

In a series of sixty-six cases of enteric fever, fourteen showed the presence of typhoid bacilli in the urine.

Eleven cases were submitted to treatment, with the following results:—

(*a*,) Two cases received salol alone, and in one instance the bacilli disappeared.

(*b*.) One case received first salol, with negative results. Urotropin was then substituted for the salol, and the bacilli disappeared almost immediately.

(*c*,) Nine cases (including the case treated first with salol) were treated with urotropin, and in every instance the use of the drug was followed by the disappearance of the bacilli. Moreover, this remarkable result was accomplished in eight out of the nine cases by 60 grains or less of the remedy. A single case required 200 grains to remove the organisms. Seven cases were followed for seven, nine, thirteen, fourteen, seventeen, nineteen, forty-three and sixty-six days, respectively, after the administration of urotropin was stopped, and no bacilli had re-appeared. The author assumes, therefore, that in these cases the removal of the typhoid organisms was permanent.

E. L. Keyes,[4] of New York, at a meeting of the American Genito-urinary Association, held at New York, spoke favourably of his experience of the use of this drug. He states that he always used urotropin when urinary chill was present or was threatened. It seemed to be almost a specific in **Acute Catarrhal Pyelitis.** Large doses might be necessary at first, these being followed by long-continued smaller doses. The centrifuge and the microscope might be necessary to detect the change in the urine following its use. Dysuria might be caused by irritation, and irritation might be caused by small doses in some cases. It was a valuable prophylactic against urethral chill. Good results followed its use after operations. Urine passed during its administration occasionally had an escharotic effect on wounds with which it came in contact. He had given one patient 67½ grains of urotropin daily for months. In that case an enlarged prostate became lessened in size, the amount of residual urine diminished, and the patient was made thoroughly comfortable.

Urotropin not only combines with acids, forming salts, but also forms with numerous compounds and groups of atoms a large number of additional products. The following are the most important :—

(1,) *Tannopin* a combination of tannin and urotropin, is a light-brown, slightly hygroscopic, tasteless powder, almost insoluble in water, weak acids, alcohol, and ether, slowly dissolving in weak alkalies. It contains 87 per cent. of tannin and 13 per cent. of urotropin. It is an intestinal astringent in doses of 15 grains three to four times daily.

(2,) *Bromethylurotropin* or bromalin, contains 56 per cent. of urotropin and 44 per cent. of ethyl bromide, and is a white crystalline powder, easily soluble in water, developing formaldehyde when heated with carbonate of sodium ; its watery solution has little taste. It has been used in **Epilepsy** in doses of 120 grains daily.

(3,) *Iodoformurotropin* (Iodoform).—Urotropin has the property of forming with iodoform a white powder which is insoluble in water ; it contains 75 per cent. of iodoform. It has been employed as a substitute for iodoform, and is said to have the same action. Wound secretions liberate iodoform from this odourless combination, so that when employing iodoformin as a remedy for wounds the odour of iodoform is always noticeable.

(4,) *The Salicylate of Urotropin or Saliformin* (Merck) consists of equal parts of urotropin and salicylic acid, and is a white crystalline powder easily soluble in water and alcohol, having an agreeable acid taste. A watery solution of salicylic acid in urotropin gives off small quantities of formaldehyde even in the cold. which increases on heating the solution.

(5,) *The Tartrate of Urotropin* contains 48 per cent. of urotropin and 52 per cent. of tartaric acid, and is a crystalline salt of a fish-like odour, readily soluble in water, and insoluble in ether. When its watery solution is boiled, a strong smell of formaldehyde is observed.

(6,) *Iodinethylurotropin* forms long colourless crystals, in the shape of needles, easily soluble in water, little soluble in alcohol, insoluble in ether. The watery solution is tasteless, and is decomposed by strong acids and carbonate of sodium, liberating formaldehyde. It is used as a substitute for iodide of potassium in daily doses of 75 to 90 grains and more.

(7,) *Benzoylurotropin* is a white amorphous substance, obtained by the addition of an excess of benzoylchloride to a hot solution of urotropin in benzol. It is a little soluble in water, hardly soluble in hot alcohol, and quite insoluble in ether and benzol.

Urotropin is somewhat expensive, the present price being 2s. 9d. an

ounce. The usual dose is from 3 to 7½ grains, three times a day, but a drachm a day may be given.

REFERENCES.—[1] "Zeits. f. klin. Med.," vol. xxxviii, Nos. 4, 5, 6, 1899 ; [2] "Galstonian Lectures on the Typhoid Bacillus and Typhoid Fever," 1900; "Lancet," April 14, 1900 ; [3] "Jour. of Exper. Med.," March. 1899 ; [4] "Brit. Med. Jour.," June 10, 1900.

The literature of the subject is extensive. A full account of Nicolaier's observation with references will be found in the "Medical Annual," 1897, p. 87.

VANADIUM.

The pharmacological action of the salts of vanadium was investigated many years ago by G. F. Dowdeswell, and many unsuccessful attempts have been made to introduce them as therapeutic agents. When given in large doses they produce fatty degeneration of the liver.[1]

Lyonnet, Martz and Martin[2] have recently reopened the subject, working chiefly with the meta-vanadate of sodium. This salt is a white powder freely soluble in water. Solutions in distilled water 1 in a 1,000, or 1 in 10,000 were employed. These olutions have only a slight metallic flavour. The authors gave 1 to 2 milligrammes of the drug per day, in two doses, one before the morning meal and one before the evening meal, and used injections of 1 c.c. of the 1 in 1,000 solution, without any disagreeable result. In one case they gave 7 milligrammes in twenty-four hours partly by the mouth and partly hypodermically.

In experiments on healthy individuals they observed no unpleasant effects, but a distinct increase of the appetite and an improved sense of well being. In thirty-nine invalids to whom the drug was given the most notable result was a marked increase in appetite. Most of the patients also experienced an improvement in strength. In several of the patients a considerable increase in weight was observed, 5 lbs. in ten days in one case, 5 lbs. in fifteen days in three cases. The quantity of urine was slightly increased, the uric acid diminished, the urea increased.

In **Anæmia** all the cases treated showed manifest improvement in appetite, strength, and weight. In **Tuberculosis** good effects were noticed, even in some advanced cases. In **Acute** and **Subacute Rheumatism** some increase of the appetite and of the weight was noticed, but no effect on the joint conditions. In some cases of **Diabetes** a temporary reduction of the sugar was observed.

The authors remark that meta-vanadate of sodium seems to give a stimulus to nutrition but its action diminishes rapidly. They believe

that the mode of action of vanadate of sodium is like that of arsenic, and perhaps like that of iron, the vanadate acting as a carrier of oxygen.

Anceau[3] speaks favourably of vanadium in the treatment of **Tubercle.** It acts as a tonic to the appetite and digestive functions. The effects of vanadium are only very slight when the pulmonary lesion manifests itself by profound constitutional changes. Should the case be one of slight tuberculous affection, especially in the early stages, vanadium seems to be of use. The appetite is stimulated; the patient is able to take abundance of nourishment, and digestive power is increased. The drug should be given from three to five days at a time, allowing a similar interval to elapse before repeating its administration.

Vanadium seems to act like arsenic and iron, but appears to be more efficacious in its action than either of these substances. It is stated to have 20,000 times more oxidising power than iron, and considerably more than arsenic.

The author says the best form is vanadate of sodium, and recommends 2 milligrammes daily by the mouth, and $\frac{1}{10}$ milligramme as a subcutaneous injection.

REFERENCES.—[1] "Murrell's Pharmacology and Therapeutics"; [2] "Lyon Méd.," Feb. and March," 1899; [3] "Thèse de Paris," 1899; "Brit. Med. Jour.," Dec. 2, 1899.

VENESECTION.

Georges Hayem,[1] of Paris, has arrived at the following conclusions:—

(1,) Venesection is indicated only in the cases in which it acts in a manner unquestionably superior to all other therapeutic measures; (2,) The employment of repeated bleedings as a method of treatment, formerly called the antiphlogistic method is condemned. The opening of a vein once or several times at relatively long intervals deserves to be preserved as a useful measure; (3,) The cases in which bleeding is indicated are, those in which life is placed in danger either by disturbances of the circulation or by toxæmia; (4,) The principal conditions in which bleeding is indicated are the following: **Acute Œdema of the Lung,** particularly in diseases of the large vessels and the kidneys; certain cases of **Pneumonia of Œdematous** or **Simply Congestive Form**; **Certain Mechanical Disturbances of the Circulation** due to disease of the heart or the great vessels, particularly in the case of arterial hypertension, but also sometimes with evident asystole; **Congestive and Hæmorrhagic Forms of Acute Nephritis; Cerebral Congestion and Hæmorrhage** at the beginning in

patients who are the subjects of hypertension: **Acute** or **Recent Uræmia, Puerperal Eclampsia; Poisoning of the Blood by Certain Gases,** notably by carbonic oxide; (5,) In all other pathological conditions the indications for bleeding are disputable; this is notably the case as regards chlorosis; (6,) The indications for bleeding are established empirically by observation. In this respect records of any real value are very few. The so-called physiological effects of withdrawal of blood can give only a very imperfect idea of the therapeutic effects of bleeding; (7,) The resistance of man and the higher animals to withdrawal of blood is considerable, in all cases where there does not exist a pathological cause of deglobulinisation or an obstacle to the renewal of the blood. Except at the extreme ends of life, in the morbid conditions that have been mentioned a fairly considerable bleeding (300 to 500 c.cm.) is always easily borne, even when the patients are markedly anæmic, which happens with considerable frequency in uræmia and puerperal eclampsia; (8,) The renewal of the blood takes place in sick people, as in the physiological state, by the intermediary of the hæmatoblasts; the elements of the marrow of bones take no part in it. These elements pass into the general circulation only in cases of excessive loss of blood repeated time after time.

M. A. Robin[2] thinks that a considerable share must be attributed to the action which the withdrawal of blood had on nutrition and organic exchanges. These effects are constant and considerable, and seem to throw light on the mode of action of bleeding. Researches carried out by the author for many years have satisfied him that, after bleeding to 150 to 250 grammes in patients suffering from pneumonia, uræmia, and heart disease, the occurrence of polyuria is regularly observed, whilst at the same time the standard of solid materials—urea, phosphoric acid, nitrogen—is notably increased. On the other hand, pulmonary ventilation is accelerated; in one case the amount of air traversing the lung was increased by 61 per cent. The proportion of oxygen consumed by the tissues undergoes a parallel augmentation. Analogous but less considerable changes are observed after hæmorrhage, either physiological (menstruation) or pathological (epistaxis, hæmatemesis from simple ulcer of stomach).

The author sums up his view in the statement that bleeding is an excellent means of increasing cellular oxidation. He holds that it is indicated in all cases where nutrition is compromised not by excess of disassimilation but by insufficiency of oxidation.

REFERENCES.—[1] "Brit Med. Jour.," Sept. 29, 1900; [2] Ibid.

WARBURG'S TINCTURE.

This is an old remedy the use of which has been revived. It may be objected that it is inexpedient to employ proprietary medicines, but the composition of this preparation is no longer a secret. In 1875, Prof. W. C. Maclean, of Netley, with Dr. Carl Warburg's permission published its formula and mode of preparation. It is a proof spirit tincture containing sulphate of quinine (1 in 50), aloes (1 in 40), opium (1 in 4,000) with rhubarb, camphor, myrrh, gentian, cubebs, zedoaria, boletus, and other substances, chiefly aromatics. It is useful in **Intermittent** and **Remittent Fevers** and produces a rapid fall in temperature. It is especially indicated in **Lobar Pneumonia,** in which the crisis is delayed. The dose is ½ an ounce, and it may be given by mouth or by rectum. Murrell [1] publishes a case of **Enteric Fever** of long duration in which it proved useful.

REFERENCE.— [1] "Brit. Med. Jour.," June 2, 1900.

The Light Treatment.

By WILLIAM MURRELL, M.D., F.R.C.P.

THERE is evidence to show that light, and especially direct sunlight, exercises a beneficial influence in maintaining the general standard of health. The Italians have a proverb to the effect that "Where the sun does not enter the doctor does," whilst amongst the Indians there is a saying that "He who plants a tree in the front of his dwelling begins to dig his own grave." In this connection reference may be made to a paper "On the Influence of Light upon Bacteria and other Organisms," by Dr. Arthur Downes,[1] now of the Local Government Board, and Mr. Thomas P. Blunt. In this article it is shown by a series of elaborate experiments that light is inimical to, and under favourable circumstances may wholly prevent, the development of bacteria and organisms associated with putrefaction and decay. An attempt was made to ascertain with what part of the spectrum this property of light was associated, and the conclusion arrived at was that it depended chiefly on the blue and violet rays.

Practical men have long recognised the value of direct sunlight in the treatment of disease. Dr. J. E. Pollock states that a freckled child is rarely consumptive. He points out that there is not only mental invigoration in sunlight, but there are vital agents assisted and possibly developed by it. Dr. Hermann Weber bears equally emphatic testimony as to the value of sunlight, and suggests that, when possible, patients when suffering from consumption should be placed on a terrace or balcony sheltered from cold winds, but exposed for many hours during the day to the full direct rays of the sun.

It is important in the selection of a place of residence for a person suffering from lung trouble or from any chronic ailment, that the aspect should be due south. The best arrangement is to have the sitting-room on the ground-floor and the bedroom immediately over it. When from necessity both rooms are on the same floor, the sitting-room should face the south, and the rooms should communicate by folding doors, which should be left open during the day, to permit of the sun shining through them into the back room.

Reflected sunlight is not without a beneficial influence, and when rooms on the same floor face east and west, it is easy to arrange half

a dozen small mirrors so that during many hours of the day both rooms get the benefit of the sunlight.[2] If the mirrors are objected to on the ground that they are not sufficiently ornamental, they can be painted with flowers, should that special form of art excite the fancy of the occupants of the rooms. The typical housewife is very fond of pulling down the window-blinds when the sun shines to save the carpet from fading, but this is paltry economy.

Siemens, in a paper "On the Influence of Electric Light on Vegetation," showed that plants progressed much more readily, and attained a much higher degree of development when subjected to the influence of sunlight by day and of electric light by night, than when exposed to the action of sunlight only. He experimented with an electric light of 1,400 candles driven by a three-horse power Otto gas-engine, but for indoor work a light of much less intensity would suffice.

Much of our recent knowledge of the subject is due to Dr. Finsen, of Copenhagen. His name is familiar to English readers from his advocacy of the red-light treatment of the exanthemata of the different eruptive diseases, especially small-pox.[3] Dr. Finsen's treatment of small-pox is founded on the following principles :—

(1,) As the "chemical" (blue, violet, and ultra-violet) rays of light are capable of causing an inflammation (erythema solare) of the healthy skin, it is assumed that they would equally be capable of aggravating pre-existing inflammations.

(2,) If the diseased skin were protected against the injurious action of the chemical rays of light, it will be possible to diminish the intensity of the inflammation, and thus prevent suppuration.

(3,) The object is to exclude the chemical rays of light which are injurious to the skin.

Finsen's method consists then in the treatment of local superficial bacterial skin diseases by the concentrated chemical rays of light.

Dr. Valdemar Bie,[4] whose article has been read by and has received the approval of Dr. Finsen, says that the experimentally proved data on which the method is founded are the following :—

(1,) The bactericidal property of the chemical rays of light.

(2,) The power of the chemical rays of light to produce an inflammation of the skin (erythema solare).

(3,) The power of the chemical rays of light to penetrate the skin.

The author finds that only a small part of the effect of the light depends on the red, yellow, and green rays, and that the ultra-violet rays have the most powerful effect. If it is desired to employ the bactericidal property of light therapeutically, the greatest possible

number of violet and ultra-violet rays must be procured ; the red, yellow, and green are useless.

Another condition for the advantageous use of the bactericidal property of the light therapeutically is that the bacteria should be quickly killed. An electric arc lamp of 25 ampères kills a plate culture of the bacillus prodigiosus at a distance of 75 cm. from the carbon points in from eight to nine hours' exposure.

Even the strongest sunlight has too feeble a bactericidal property to be of use for therapeutic purposes, otherwise all bacterial skin diseases would be cured spontaneously in the summer. In order to obtain a more energetic effect it is necessary to concentrate the light by means of a suitable apparatus. It is only when the light is concentrated in such a way that it contains as many blue, violet, and ultra-violet rays as possible that its bactericidal property becomes so powerful that it can be used therapeutically. The concentrated electric light, which Finsen now uses for the treatment of patients, kills the bacteria in a few seconds when spread in a stratum of agar, $\frac{1}{5}$ mm. thick.

The question of the power of chemical rays to penetrate the skin has been investigated by Godneff and Finsen. The former introduced small sealed glass tubes containing chloride of silver under the skin of dogs and cats. He allowed some of those animals to remain in the dark, while he exposed the rest to direct sunlight. After an hour he took out the tubes ; and it was found that the chloride of silver was blackened in those animals exposed to the sun, but not in those kept in the dark.

The apparatus employed in the Finsen method is thus described : In the treatment of the patients sunlight is used in the summer, when the sky is bright ; at other times the light of electric arc lamps of 50 to 80 ampères is employed. As already explained, it is only by concentration that the light becomes so powerful that its bactericidal property can be used therapeutically. In order to avoid burning the skin it is necessary to cool the light. This double object—to make the light stronger and cooler—is attained, in regard to sunlight, by an apparatus, consisting of a lens of from 20 to 40 cm. in diameter. This lens is composed of a plain glass and a curved one, which are framed in a brass ring, and between them there is a bright blue, weak, ammoniacal solution of copper sulphate. As one surface of the liquid is plain and the other curved, its optical function is that of an ordinary plain convex glass lens. By making the lens of a blue liquid instead of solid glass, considerable cooling of the light is obtained, as water absorbs the ultra-red rays, and the blue colour excludes a

considerable amount of the red and yellow rays. These three kinds of rays have strong heating effect, while their bactericidal power is insignificant. The blue, violet, and ultra-violet rays, which it is important to procure in as large a number as possible, are but very slightly impaired by passing through the blue liquid. The lens stands on a foot, made so that the lens can be raised and lowered as well as turned on a vertical and horizontal axis. By this arrangement it is easy to place the lens perpendicularly to the sun's rays, and at such a distance as to make the light strike the area of skin which it is desired to treat.

For concentrating the electric arc light an apparatus is employed consisting of lenses of quartz framed in two brass tubes which slide one into the other, like the two pieces of a telescope. Lenses of quartz are used because this material in a far higher degree than glass allows the ultra-violet rays of shortest wave length to pass through, and it is these ultra-violet rays that have a considerable bactericidal effect. The apparatus for concentrating sunlight may be made of glass, because all the ultra-violet rays of the sunlight have so long a wave length, that they pass through glass ; those of a shorter wave length have already been absorbed by the atmosphere.

Finsen has treated a number of skin diseases known or supposed to be of microbic origin, but it is only in lupus vulgaris, lupus erythematosus, and alopecia areata that any marked success has been obtained.

Lupus Vulgaris.—About three hundred and fifty cases of this disease have been treated. The first patients were treated entirely by light and the same plan is still followed with all the slighter cases. In the more serious cases the treatment by light is assisted by treatment with pyrogallic acid ointment, to make the skin as smooth and easily penetrable by the light as possible. While one part is being treated by light, the pyrogallic acid ointment is put on another ; when the cauterisation is healed by zinc ointment this area of skin is treated by light. This treatment with ointment is not necessary in order to obtain good results, but it saves time. Ulcerated surfaces are kept free from crusts by poultices or boric acid solution. Mucous membranes are touched with a solution of iodine in iodide of potassium, or are treated with the galvano-cautery.

Only the skin, the hard palate, the front part of the septum nasi, the tongue, and the mucous membrane of the cheek, can be cured by this method. In none of the cases has the treatment been without effect, but in five cases the improvement was very slow, either because the disease was progressing so rapidly that it was extending in one

place while the treatment went on in another, or because the lupus was so deep that light could only with difficulty penetrate to it. In the other three hundred and fifty cases the results of the treatment were satisfactory. No detailed statistics are given.

Lupus Erythematosus.—The treatment of this disease has in many cases given excellent results—permanent recovery and firm scars. The effect of the treatment, however, is not nearly so sure as it is in the case of lupus vulgaris. A few cases have improved slowly, many of them with a constant tendency to recurrence.

Alopecia Areata.—The number of cases of this disease under treatment has been very small. Dr. Bie[5] thinks that on the whole the trials made up to the present look promising. Even the old decalvans forms seem to be curable, though only after a long treatment. Besides the practical interest attached to these experiments, they are of theoretical interest from the support they afford of the infectious origin of alopecia areata.

Dr. Valdemar Bie's paper is illustrated by a series of photographs of patients before and after treatment.

Dr. Finsen has now treated patients according to this method for over three years, and in one case at least there has been no recurrence of the disease after a two years' interval succeeding the cessation of the treatment. Some cases of epithelioma have been treated in this way with, it is said, good results.

The Light Treatment has not been adopted to any extent in this country, or at all events observers have not reported their results. It must be remembered that a suitable dynamo costs £200 and the whole installation about £500.

At the London Hospital where some cases are under treatment the patients are photographed before, during, and after treatment, and records are kept of the attendance of each patient, the duration of the treatment, with notes and diagrams of the particular cases.

After the area of skin selected for the day has received an hour's treatment, a dressing of zinc carbonate and lanolin is applied—if suppuration should subsequently occur, a boric ointment is used—and the patient is allowed to leave. There is at the time no redness, or swelling, or pain—in short, no heat effect; but from six to twelve hours later redness and swelling set in, but without pain, a reaction which is more marked in the skin of the younger patients. At the end of twenty-four hours the reaction is fully developed. Bullæ often form, and there is usually some serous weeping; but there is rarely pustulation, and never necrosis of tissue. The antiseptic precautions

which have been described are taken chiefly to avoid the occurrence of erysipelas.

The plan adopted in attacking any diseased area of considerable size, is to begin at the periphery with a circle of rings overlapping healthy skin, and to work concentrically inwards. The tubercle bacilli are destroyed, but the healthy skin is unaffected; the redness persists for a rather long time, and then comes the process of contraction, which leaves a flat, smooth, soft cicatricial area.

It is stated that local treatment is supplemented by appropriate constitutional treatment; if the patient be anæmic iron is administered, and to every patient cod-liver oil is given. This from an experimental point of view is to be regretted, as it introduces a disturbing element and detracts from the value of the observation.

The drawbacks of the Finsen method are its slowness—it takes months to effect a cure in many cases—and the impossibility of treating with it the affected mucous membranes because of the insuperable difficulties of focussing the rays to curved surfaces. The diseased mucous membranes have to be treated after the ordinary fashion by iodine or lactic acid. Treatment cannot be carried on with the lenses at present in use near the eye for fear of implicating the conjunctiva, although in practice the eye is protected by a pad of damp wool covered with a piece of brown paper.

No English statistics have yet been published, and as far as this country is concerned the treatment is still in an experimental stage.

Mr. Malcolm Morris has recently had fitted up for the use of his patients, a Finsen apparatus which he procured from Copenhagen. It is provided with an electric arc lamp of from fifty-five to seventy-five ampères current, and with the necessary lenses of crystal, fitted with jackets of cold water.

Mr. Morris[6] has treated by this method several cases of lupus vulgaris with, on the whole, fairly satisfactory results. He points out that the subject must be considered in a tentative way only, and that it would be unwise to make exaggerated statements about curing lupus, though the procedure was satisfactory in many ways. It could be fairly said that the method was painless, that no anæsthetic was required, and that there was nothing in it to frighten or to repel a patient. Putting it briefly, a medical man could safely assert that given a powerful electric arc light, with suitable telescopes fixed at the right distance so as to concentrate the light properly cooled on to the patient's skin as he lies on a couch (if the situation of the lupus were convenient for focussing), the results would in a large proportion of cases be satisfactory. The drawbacks are that the treatment is

tedious, the patient requiring long and frequent exposure to the light, and that the longer the treatment the less power the light has of piercing the tissues in any particular case. There seems to be three factors specially detrimental to the success of this method: scar tissue, blood, and pigmentation. Mr. Morris does not accept the theory that the chemical rays act in a remedial manner entirely by their bactericidal power. The curative agency of these chemical rays is not confined to lupus vulgaris, for Mr. Morris has had under treatment a case of lupus erythematosus, in which great improvement resulted, and also a case of rodent ulcer in which the hardness had disappeared, leaving only a superficial healing ulcer.

REFERENCES.—[1] "Proc. Roy. Soc.," 1877–79, and 1886: [2] Murrell's "Pharmacology and Therapeutics," 1896, p. 133; [3] "Brit. Med. Jour.," Dec. 7, 1895: [4] Ibid., Sept. 30, 1899; [5] Ibid., June 30, 1900: [6] "Lancet," July 7, 1900.

Study of X-Rays in 1900.

By JOHN MACINTYRE, M.B., C.M., F.R.S.E., F.R.M.S.

DURING the past year considerable advancement has been made in the construction of apparatus and methods of diagnosis, while treatment by means of the X-Rays has been tried clinically and experimentally. A very large increase in the number of papers published is to be noted, many of them of a valuable nature.

Apparatus:—Transformers.—A great many instrument makers have been paying attention to the improvements in the construction of coils. One of the most interesting, although not yet fully tested, is being introduced into this country by Mr. Isenthal, in the form of the closed circuit coil. It is said it will be much more efficient although somewhat more expensive. The spark given is very much thicker than that of coils made after the ordinary pattern. The results obtained will be watched with interest, as much is expected from this coil.

Tesla, in a letter to the writer of this article, dated October, 1900, refers to his own induction coil for oscillatory discharges, and states that much material has been accumulated since his last contribution to this branch of scientific literature. Although delayed, as his time is occupied with other matters, he has been able to bring it into a finished form, and "has made satisfactory advances in construction which he hopes will enable him very soon to be in a position to furnish apparatus enabling scientific men to more successfully investigate the interesting field which Röntgen's great discovery has opened up."

Different views continue to be expressed as to the relative merits of the static machine as compared with the coil. While it is only fair to state that more influence machines are now in use than three years ago, nevertheless most workers seem to prefer the coil. Moreover, with the great improvements in interrupters, such as the Wehnelt, Caldwell, and mercury jet, the unsteadiness of the fluorescent screen complained of when the coil was used, has practically disappeared. Mr. Pidgeon has introduced some new ideas in the construction of static machines, and claims, with a fair amount of reason, that he has

rendered the influence machine more efficient. In this connection it may here be important to note that one of the most striking papers of the year was read by Professor Trowbridge at a meeting of the American Academy of Arts and Sciences. He states that, by means of twenty thousand cells of the Planté type, he could obtain forty-two thousand volts, and by the use of Leyden jars step up to three millions. After referring to many interesting experiments, he found, like Tesla and others, that the air at atmospheric pressure becomes a fairly good conductor beyond two million volts; that large electric discharges, six or seven feet long, resembling lightning, can be obtained, and that these long sparks are oscillatory. Great heating effects could be produced, and he points out one direction in which such enormous currents may some day be useful in surgery, furnishing, as they do, a new source of X-rays. Professor Trowbridge considers that this is the ideal method of producing Röntgen rays, viz., by means of a large storage battery. He finds X-rays can be obtained with a steady current at a voltage of five thousand, strongly at twenty thousand, and with extreme brilliancy at forty thousand volts—and this with a small current—ten milliampères being dangerous to the tube employed. One of the most important statements is that his photographs show great contrasts, much better, he claims, than in the picture he obtains by using a coil. The writer of this article is fortunate in being in the position of experimenting with such an apparatus, which, for obvious reasons, is not open to the most of us, and whether his suggestion that this may be advantageously employed in surgery is within the range of practice in the future or not, his conclusions that a steady current can produce such effects, and the importance of the paper, can hardly now be estimated, and future experiments will be eagerly looked for.

The great advantage claimed for this method is the steady illumination of the screen, and, although the writer believed that an oscillatory discharge was necessary for the stronger manifestations of the rays, he now finds this is not so, and points out that in his experience the discharge could not take place through the large resistance which he employed of four million ohms.

Interrupters.—Further improvements have taken place in the construction of chemical interrupters, and any worker can now easily obtain a first class Wehnelt. An ingenious rotatory interrupter has recently been made for Mr. Mackenzie Davidson by Messrs. Newton and Co., of London. It is by no means as severe upon tubes, and it is not as expensive as some of the other interrupters. It gives excellent results, and will most likely

be largely employed. The mercury jet interrupter of Levi is becoming popular, and is by no means so destructive to tubes as the Wehnelt.

Crooke's Tubes.—Instrument makers have done much during the past year to improve this part of the apparatus. Chaband has produced a tube very suitable for alternating currents, but this is not so largely used in X-ray work as the other forms. Tesla is still further experimenting with his special monopolar form, which, with the new transformer above referred to, can be brilliantly illumined sixty feet away, giving great steadiness and brilliant fluorescence on the screen.

Localisation.—In addition to the earlier arrangements and methods of Moore, Payne, Fleming, and the well known ones of Mackenzie Davidson, Professor Remy, at a meeting of the Röntgen Society, gave a demonstration of a new localiser, which was well received. A description of this will be found in the "Archives of the Röntgen Society."

Stereoscopic X-Ray Work.—Elihu Thomson was the first to explain the methods and apparatus necessary for producing stereoscopic photographs, and many workers are now paying particular attention to these. Any one, who has had any experience of the value of stereoscopic vision in X-ray work, can fully appreciate its importance. From stereoscopic photographs it was but natural that we should desire to see things stereoscopically on the fluorescent screen. After much labour, a most ingenious arrangement has been produced by Mackenzie Davidson and made for him by Messrs. Newton. This instrument is bound to be of great value in the examination of the extremities, head, and also in many other parts of the body. No doubt, as yet, with all the improvements upon fluorescent screens, they are not as satisfactory as photography which allows examination at leisure, and often with much greater detail ; nevertheless, now that Mr. Mackenzie Davidson has placed it in our hands, it is certain to meet with great success and appreciation. In construction, for certain parts of the body, it is cumbersome, but no doubt it will in due time be modified to overcome all difficulties.

Diagnosis.—While most people are inclined to be satisfied with the progress of X-rays in diagnosis, considering the short time these forces have been at our disposal, we have it on the authority of the editor of one of our leading medical journals, that the results in fractures have been over-estimated, and some physicians have given expression to the regret about their limited value in medicine. That

they would prove more valuable at first in surgery than medicine was to be expected, but this, to a very considerable extent, has been remedied within the last two years. We find in connection with many of our large hospitals that pathological lesions, such as aneurysm, tubercular deposit in the lungs, mediastinal abscess, disease of the glands, and the presence of fluids, have been frequently observed, and, in some instances at least, diagnosis made at an earlier period than would have been by any other methods. The writer read a paper at the last meeting of the British Laryngological Association upon the position of the rays in diagnosis and treatment of affections of the throat and chest, dealing with the question of how far the rays have been of value in these regions. The paper is reported in the June number of the "Journal of Laryngology." Many examples of the value of the X-rays, particularly in the region of the chest, are quoted. Dr. Tuffier,[1] in the course of a discussion on the operative treatment of multiple bronchiectasic cavities, directed attention to the use of radiography in the diagnosis of this morbid condition. He believes that in many cases in which the diagnosis is doubtful, or the auscultatory signs do not give reliable results and fail to localise with precision the pulmonary cavity, the Röntgen rays will reveal them on the fluorescent screen. Interlobular collections inaccessible to the usual methods of examination may thus be diagnosed. In a case of gangrenous abscess of the superior lobe of the right lung, in which, as usually occurs in cases of this kind, the stethoscopic signs were negative, Tuffier, by the help of radiography, was enabled to discover and open the abscess. Instances of this kind, it is stated, might be multiplied. A radiographic examination will in most instances of multiple cavities reveal the presence of all, and so prevent the surgeon from acting under the impression that there is only a single cavity. Radioscopy, however, it is pointed out, is not an absolutely infallible means of diagnosis. In cases in which the existence of pulmonary cavities is rendered certain by auscultation the X-rays may fail to give any result. This is not surprising, especially if the lesions be situated in the lower parts of the lungs near the abdominal organs and the heart, as the affected regions are then covered by organs which are too thick to be readily traversed by the rays. The radiographic picture does not present the exact limits of the pulmonary cavity, but only the extent of the surrounding zone of sclerosed tissue. Tuffier has much faith in the prospects of radiography in the surgery of the lungs, and believes that, with further improvement of apparatus, observers will be able to distinguish minute differences in the thickness of tissues, and so determine

with precision the seat, the limits, and, probably, the nature of pulmonary lesions.

Lenard, of Philadelphia, has written an interesting paper on calculi in the kidney, in which he goes the length of stating that, largely as a result of careful study of the proper conditions of the tube (Queen's pattern), he could affirm that not only could such be detected, but where a negative result on the photographic plate has been obtained, no stone was present. Mr. Shenton has written an article in "Guy's Hospital Gazette" recording extremely satisfactory results in diagnosis in the same region. His results generally are very encouraging.

War.—While the X-rays were employed in the Greco-Turkish War and in the Soudan, the first great opportunity of testing their value was in South Africa. While it is too recent to say anything of a definite nature, it may here be pointed out that the writer in his presidential address to the Röntgen Society last year stated that he was able to say, on the authority and owing to the courtesy of Surgeon-General Jamieson, the Director-General of the Army Medical Department, that the X-rays were found most useful in hospitals at the base and in the line of action, although not exactly of use upon the field. There is now a regulation apparatus for army work, and seventeen sets of apparatus were sent out to South Africa. The same authority states that the X-rays are now being used and apparatus supplied to all the larger military hospitals.

Medico-Legal Questions.—Of the reports upon questions which have agitated the professional, as well as the lay mind, during the past four years, in connection with this subject, none is of greater interest than that of the Committee appointed by the American Surgical Association to consider the medico-legal aspects of the X-rays. As the result of a communication published in 1897 by Dr. J. Wilson White, of Philadelphia, a Committee was formed to consider the question, and the writer of the paper appointed chairman. We have now had their reports, and a series of resolutions have been accepted as the finding of the Association. A circular was sent to every member with a series of questions; answers were generally returned; and the conclusions arrived at are the results of mature consideration from many sources. Amongst others, the question was considered whether patients sustaining injury should be examined as a matter of routine; the possibilities of exaggerating deformities were fully demonstrated; mistakes in connection with foreign bodies and the search for calculi through structures in the deeper tissues; faulty interpretation of photographs; evidence of fractures which were

known to exist, but evidence of which did not appear on the photographic plate ; and incomplete union where other indications showed that the case was proceeding in a normal and satisfactory way. Records of operations which had been performed uselessly by the surgeon being misled by the photographs were submitted ; the value of photographs in court was also dealt with, and complexities of opinions of judge and jury referred to, where claims for damages had been set up in cases of mal-praxis, or where the practitioner had been sued because, in taking a photograph, accidental burns or other lesions had been inflicted upon the patient.

This distinguished Surgical Association unanimously adopted the conclusions of the Committee, which were :—

(1,) The routine employment of the X-ray in cases of fracture is not at present of sufficient definite advantage to justify the teaching that it should be used in every case. If the surgeon is in doubt as to his diagnosis, he should make use of this as of every other available means to add to his knowledge of the case, but even then he should not forget the grave possibilities of misinterpretation. There is evidence that in competent hands plates may be made that will fail to reveal the presence of existing fractures, or will appear to show a fracture that does not exist.

(2,) In the regions of the base of the skull, the spine, the pelvis, and the hips, the X-ray results have not as yet been thoroughly satisfactory, although good skiagraphs have been made of lesions in the last three localities. On account of the rarity of such skiagraphs of these parts, special caution should be observed, when they are affected, in basing upon X-ray testimony any important diagnosis or line of treatment.

(3,) As to questions of deformity, skiagraphs alone, without expert surgical interpretation, are generally useless and frequently misleading. The appearance of deformity may be produced in any normal bone, and existing deformity may be grossly exaggerated.

(4,) It is not possible to distinguish after recent fractures between cases in which perfectly satisfactory callus has formed and cases which will go on to non-union. Neither can fibrous union be distinguished from union by callus in which lime salts have not yet been deposited. There is abundant evidence to show that the use of the X-ray in these cases should be regarded as merely the adjunct to other surgical methods, and that its testimony is especially fallible.

(5,) The evidence as to X-ray burns seems to show that in the majority of cases they are easily and certainly preventable. The essential cause is still a matter of dispute. It seems not unlikely when

the strange susceptibilities due to idiosyncrasy are remembered that in a small number of cases it may make a given individual especially liable to this form of injury.

(6,) In the recognition of foreign bodies the skiagraph is of the very greatest value ; in their localisation it has occasionally failed. The mistakes recorded in the former case should easily have been avoided ; in the latter they are becoming less and less frequent, and by the employment of accurate mathematical methods can probably in time be eliminated. In the meanwhile, however, the surgeon who bases an important operation on the localisation of a foreign body buried in the tissues should remember the possibility of error that still exists.

(7,) It has not seemed worth while to attempt a review of the situation from the strictly legal standpoint. It would vary in different States and with different judges to interpret the law. The evidence shows, however, that in many places and under many differing circumstances the skiagraph will undoubtedly be a factor in medico-legal cases.

(8,) The technicalities of its production, the manipulation of the apparatus, etc., are already in the hands of specialists, and with that subject also it has not seemed worth while to deal. But it is earnestly recommended that the surgeon should so familiarise himself with the appearance of skiagraphs, with their distortions, with the relative value of their shadows and outlines, as to be himself the judge of their teachings, and not depend upon the interpretation of others who may lack the wide experience with surgical injury and disease necessary for the correct reading of these pictures.

It may here be pointed out where doubt is expressed as to value that the findings of this or any other Association may require to be changed any day ; they do not stand for all time. By way of comment further, we may emphasise the point that in every branch of science corroborative evidence from every other source should always be obtained ; that every X-ray photograph does not reveal all that could be revealed by photography, and that sometimes the best results can only be obtained where the surgeon combines in himself professional knowledge with that of the expert in X-rays. There is one comment allowable in connection with the legal aspect of the question and the interpretation of photographs generally, and, strangely enough, to a large extent omitted in these discussions—that is, the value of stereoscopic observation by plate or screen. If there be a province in which either of these particular methods is of value, it is surely in medico-legal work.

Therapeutic Action of the X-Rays.—Stenbeck, of Stockholm, describes a case of rodent ulcer in the tip of the nose of a woman, aged sixty-seven, treated by the Röntgen rays. The rays were applied for ten minutes daily at a distance of 10 cm. Reaction occurred after four sittings, and on the tenth pus appeared. After thirty-five sittings the ulcer was more healthy, and the epidermis began to grow in from the edges. After a short interval the sittings were increased to fifteen minutes, and a second re-action took place, followed by improvement. The epidermis grew over the ulcer, the edge flattened down, and in a month a smooth cicatrix was left, differing little from the facial epidermis, and surrounded by a slightly raised border.

An interesting discussion upon the use of X-rays is reported in the "Archives of the Röntgen Rays," London. The discussion was opened in this Society by a paper of Miss Sharp, who gave her results of treatment.

During the past year great attention has been paid to the discovery of other waves in ether which resemble X-rays. Becquerel, M. and Madame Curie, Crookes, have written some papers of great interest. Great excitement has been caused by the discovery of radio-activity in uranium salts, polonium, radium, actinium, Ur. x, and others. These excite fluorescent screens, discharge electrified bodies, and some at least are capable of chemical action, converting oxygen into ozone, and are composite. Some of the substances lose their properties when heated to a certain degree, and regain them when cold.

All physicians and surgeons are now familiar with the experiments which have been tried therapeutically to employ the X-rays in the treatment of diseases of the skin, tubercle, etc. In this connection a great many experiments have been tried to prove whether or not the X-rays can destroy micro-organic life, as it was naturally assumed that if they did they could be employed successfully therapeutically. The results have not, so far, been encouraging. Drs. R. Norris Wolfenden and Forbes Ross in their last experiments have come to the conclusion that the X-rays actually stimulate the growth of organisms. This is their opinion after carefully excluding, as far as possible, all possible error of other forces being at work at the time of their experiments. The question as to whether their action is curative in skin affections and others and may be due to the stimulation of the vital forces enabling them to overcome the action of micro-organism, has been advanced pretty freely during the past year. It naturally follows, if the X-rays can do this, why should not some of the above-

mentioned radio-active substances be employed therapeutically? So far no one has discovered anything which would show they can take the place of X-rays in diagnosis, because none of them act upon the photographic plate or fluorescent screen to such an extent as to make them practical. While it is true, therefore, in this sense they do not compete with the X-rays meantime, nevertheless the possibility of dusting on some radio-active substances in skin and other affections might be of use, and is at present being tried. The possibility of therapeutic action, therefore, in this direction is not improbable.

REFERENCE.—[1] "Bull. et Mém. de la Soc. de Chir.," March 6, 1900.

PART II.—NEW TREATMENT.

The Dictionary of New Treatment in Medicine and Surgery, 1901.

ABDOMEN (Gunshot Wounds of).

Walter G. Spencer, M.S., M.B., F.R.C.S.

Nothing has recently excited more interest than the question whether gunshot wounds of the abdomen should be treated expectantly or actively. As an immediate result of the Boer War a remarkable revolution has taken place. At the Portsmouth Meeting of the British Medical Association, Col. Steavenson[1] opened a discussion by stating from the experience of previous wars, that nearly all penetrating gunshot wounds of the abdomen were fatal from hæmorrhage, or from fæcal extravasation and septic peritonitis. Resting on the analogy of pistol bullet wounds occurring in civil practice, immediate laparotomy, without waiting for inflammatory or other symptoms, was deemed to be the proper treatment. Thus many surgeons went to South Africa expecting to have a large number of abdominal operations. It was, moreover, supposed that by improving field hospitals and having sterilised instruments and dressings, abdominal surgery might be carried out in the Field Hospitals.

Experience has shown that the wounds caused by the Mauser bullet used by the Boers have healed wonderfully under expectant treatment, and in only exceptional instances has a secondary operation been called for. Moreover, it is clear that in the Field Hospitals, as distinct from Base Hospitals, no number of abdominal operations can possibly be undertaken with success.

The wounds caused by the Mauser bullet, when not immediately or quickly fatal from hæmorrhage or shock, allow of recovery with few or slight transitory symptoms in the great majority of cases (more than 60 per cent.), whilst some laparotomies undertaken early in the war were decidedly unsuccessful. Looking backwards there were some facts of a favourable character already on record, but they were treated as exceptions to be ignored, and attention was more directed to experiments, such as those of Bruns, in Germany, which set up

such an outcry against the "Dum-Dum" bullets on the Continent. Such experiments differed totally from the conditions actually obtaining in war. Senn [2] saw a number of men with perforating wounds of the abdomen in Cuba who were in a fair way to recover without operation, whilst four laparotomies done in Santiago all died, as did those in our Tirah campaign.

Of course, the observations made in South Africa relate mainly to the Mauser bullet. It may be that military exigencies, owing to the long range at which actions are fought and the cover employed, requiring an enormous expenditure of ammunition as compared with the number of hits, may lead to the use of more destructive bullets than the Mauser or Lee-Metford, in order to put out of action or kill with one hit. It is notorious that several wounds, even through the abdomen, have been received without immediately putting the wounded man *hors de combat*. It will be interesting to observe the rifles adopted in the future on the Continent, where there has been so much hypercriticism on the use by us of destructive bullets against savages. If a more injurious bullet than the Mauser should be adopted in future wars, then abdominal wounds may of necessity have to be actively treated.

As regards the war in South Africa, the most definite statements have been made by Treves.[3] Although the abdomen has been completely traversed in various directions, and in spite of unfavourable circumstances, such as lying out for hours on the ground and a long transport to hospital, recovery under expectant treatment took place with hardly any symptoms. In one or two abdominal sections he made at first, he found that harm was being done, for coils of intestine already adhered and sealed the wounds, there was no prolapse of mucous membrane, nor extravasation of contents. He had with him sealed tins containing sterilised instruments, sponges and dressings sufficient for an operation, but during the advance to Ladysmith there was a great lack of water even for drinking, so that ordinary personal washing could not be carried out; the heat and the flies were terrible, and the patients had to be transported far. Patients who were wounded on an empty stomach and who did not drink afterwards took a favourable course; deaths have been attributed to the wounded drinking water freely. It is impossible to operate for wounds traversing the abdomen above the umbilicus on account of the multiple character of the injuries, and those below get well of their own accord, in one case after a vesico-rectal fistula had formed. It is impossible to operate at once when a bullet has been retained, as its direction is unknown. It has first to be located by the X-Rays, and then its course has to be studied by

referring to the position of the patient when wounded. Only when the bullet has escaped so that its course is known, the condition of the patient is good after a short transport, and there are signs of abdominal hæmorrhage continuing, would Treves advise operation.

The expectant treatment has been strongly endorsed by Sir William McCormac, and has been generally adopted throughout the war.

A few interesting secondary operations have been done in the base hospitals, and fuller records will doubtless appear later. The whole omentum has been drawn out of the wound as a slough, fæcal abscesses behind the colon and fistulæ have required treatment. But on the whole, the amount of active interference in abdominal injuries has been very small.

REFERENCES.—[1] "Brit. Med. Jour.," 1899, ii., 1057; [2] "Jour. Amer. Med. Assoc.," Nov. 1898; [3] "Brit. Med. Jour.," 1900, i., 1156.

ABORTION. *Edward A. Ayers, A.M., M.D., New York.*

Acetanilide is warmly advocated by Harnsberger[1] as a uterine sedative in threatened abortion in doses of from ½ to 1 gramme every four or two hours.

In criminal abortion, Draper[2] points out the medico-legal responsibility resting with the physician who receives a "dying declaration" of the patient. He becomes a competent witness as to the belief of the woman that she is dying, and that she speaks the truth.

The diagnosis of a previous pregnancy (abortion) by the examination of shreds of uterine mucosa removed by the currette is thoroughly discussed by Opitz.[3]

As certain evidence are the finding of portions of the fœtal body, villi of the chorion, cell-columns covered by syncytium, syncytium-buds (placental giant cells), and giant cells of the serotina. Of maternal source are decidual cells 20 to 50 c.c., in diameter, in closed groups of uniform cells, or isolated in the hyaline wall of hollow spaces.

Of probable signs he mentions: shreddy masses of destroyed mucosa; hyaline and striated discs with round cells occurring singly or in rows; regenerating changes in the mucosa with separation into a superficial layer, poor in glands and a deeper one, rich in glands, with decidua-like cells near the vessels; dense small cell infiltration and disintegration of tissues through hæmorrhage.

Quinine as an Oxytocic.—Chambrelent and Bruyere[4] report, as the result of careful study, that only in a small percentage of pregnants is quinine possessed of oxytocic properties.

REFERENCES.—[1] "La Sem. Méd.," No. 56, 1898; [2] "Boston Med. and Surg. Jour.," Nov. 9, 1899; [3] "Zeits. f. Geb. u. Gyn.," 1900, xlii., No. 1; [4] "Jour. de Méd. de Bordeaux," March 11, 1900.

ABSCESS (Alveolar) AND ERYSIPELAS.

J. G. Turner, F.R.C.S., L.D.S.

A Point in Diagnosis.—Owing to special local conditions acute alveolar abscess is not infrequently confounded with facial erysipelas. This arises from the fact that great swelling of the soft parts and capillary injection accompanies such an abscess, even reaching so far as to cause œdema of the eyelids (this has been observed in connection with alveolar abscess due to either upper or lower teeth); this swelling and injection being greater at a time when, owing to the pus having bored an opening through the alveolar plate, the pain of the abscess is absent. Further, in cases where there has previously been an abscess which has found a way out for itself and subsided, a recurrence is accompanied by comparatively little pain since the pus easily tracks along the old route. Hence when facial erysipelas is suspected the teeth should be examined and enquiry made for pain or a history of a previous attack. In such cases the extraction of the tooth, and if needed, an incision through the mucous membrane to let out pus, will generally clear matters up. (See "Abscess Due to Teeth": *Alveolar Abscess and its Sequelæ*, p. 104.)

Though alveolar abscess is generally due to simple, or staphylococcic infection, still it may be due to streptococci and be the actual starting point of erysipelas. Such a case the writer thinks to have seen in a medical student who, while dressing a case of erysipelas, developed a most acute and rapidly spreading alveolar abscess leading to sloughing of the gum round two dead upper bicuspids. The attack was cut short by vigorous local application of antiseptics.

Another case, probably of a similar nature, lately occurred at one of the London General Hospitals. The patient, a healthy young man, attempted to extract some upper molar roots for himself with a pair of scissors. The attempt was followed by a severe and spreading inflammatory process, and led to death of soft parts and necrosis involving the walls of the antrum. In this case, in spite of vigorous local treatment, the infection became general and the patient died.

These cases may be co-related with those of angina of the neck following alveolar abscess or tooth extraction (perhaps done for the abscess) and are probably all due to an *organism present in the mouth at the time of the injury*, and favoured in its growth by the condition of the mouth. All this points to the importance of local cleanliness. All tartar must be removed, and all foul stumps and teeth with suppurating sockets or discharging sinuses extracted, or rendered thoroughly aseptic.

ABSCESS DUE TO TEETH. *J. G. Turner, F.R.C.S., L.D.S.*

An abscess generally arises in connection with a tooth in one of two ways—either as in what is commonly known as an alveolar abscess, by the passage of infected matter through the apex: or as a "paradental abscess."

This latter form is more truly alveolar than the so-called "alveolar abscess," and is generally capable of far less serious results. It occurs in connection with teeth which may be apparently healthy, in which there is no caries and whose pulp is yet alive. It will always be found, however, that the tooth is the subject of "pyorrhœa alveolaris" leading to destruction of at least part of its alveolus, and hence to a pocket between the gum and the tooth. In this pocket *débris* collects and decomposes, and eventually pus forms, and not finding sufficient exit round the tooth forms an abscess, which may be very painful but is often attended by but little discomfort. Such an abscess is readily cured at the time by evacuating the pus, but, unless the pocket can be obliterated or kept thoroughly clean, is bound to recur: hence the most efficient treatment is extraction.

It sometimes happens that such an abscess forms, for example, on the lingual aspect of an upper incisor tooth, and the pus tracking round the tooth forms for itself a sinus on the labial aspect. If the pocket above mentioned be not sought for a diagnosis may be made of alveolar abscess connected with a living tooth, a most rare and unexplained condition.

If it be desired to retain teeth the subjects of paradental abscess, a single rooted tooth (incisor) is the most favourable for treatment, and should first be carefully freed from tartar and the patient taught to use a fine syringe and antiseptic lotion, passing the nozzle well up along the side of the tooth. When the acuter condition has subsided the patient should keep the syringe and be instructed to use it on feeling any tenderness of the tooth.

Chronic Abscess of the Maxilla.—Another and far more serious form of abscess often follows as a consequence of localised pyorrhœa alveolaris, though due in some cases to an ordinary "dead tooth." This abscess, first described by the writer in a paper read before the British Dental Association in 1899, is *par excellence* the chronic abscess of the maxilla, and for it the name might well be retained. Fully developed it hollows out the entire body of one maxilla, giving rise at the same time to extremely little local disturbance. There will be a discharging sinus on the labial surface of the alveolus near the tooth which has given rise to the trouble and some slight swelling and tenderness of the parts round it. Pain is often absent.

On examination of the palate a soft spot may be found where the hard bony palate has been perforated, but there will be no sinus and no fluctuation, as the pus finds an exit through the sinus already mentioned. The abscess remains limited to the maxilla of one side. These abscesses cause so little trouble that they are sometimes only discovered by accident ; but at others the outlet becoming blocked, the symptoms become acute and the patient applies for treatment. In other cases, again, the patient may complain of indefinite neuralgia due to osteitis set up by absorption from pus which has been retained in some pocket of the abscess cavity, and decomposed.

In the treatment of such an abscess a free drain must be established ; the cavity scraped, taking care not to perforate the palate mucous membrane, and syringed and packed lightly twice daily till the whole heals up from the bottom. If the patient desires to save the tooth and has the necessary patience, the treatment may be carried out through the enlarged sinus, but extraction of the tooth will enable a larger drain to be made. It is better not to extract sound neighbouring teeth.

Such a chronic abscess is due to a slowly spreading and destructive caries of the bone set up by infection from a dead tooth or following the spread of a chronic pyorrhœa alveolaris up the socket. Pyorrhœa alveolaris consists in a more or less active and destructive caries of bone starting at the edges of the alveoli of teeth. This spreads up, destroying the bone as it spreads, till the apex of the tooth is reached and thence invades the body of the bone. At the apex it comes across the nerve and vessels, entering the tooth, and these eventually are killed and reinforce the morbid process by products of their decomposition.

Alveolar Abscess and its Sequelæ.—The so-called alveolar abscess starts round the apex of a dead root, and is really an acute abscess of the body of the bone, since the roots of teeth always reach well beyond the alveolar portion into the body of the bone, either maxilla or mandible. It is caused either by the spread of infective organisms through the apical foramen ; or by actual passage through the apex of infected material, forced through by the pressure of accumulated gases of decomposition, or by too vigorous instrumental interference. The pus makes a way out for itself usually through the outer alveolar plate, and stripping up the muco-periosteum points in the alveolar buccal sulcus. In the case of the lateral maxillary incisor the pus often pierces the palatal side of the bone and points on the hard palate, owing, probably, to the shortness of its root and to its occupying during development a position posterior to the incisors and canines. An

abscess starting round the palatal root of the molar will also point on the hard palate.

If the root of the tooth is so long as to reach below the insertion of the buccinator into either jaw, then the pus, after stripping up the periosteum and forming a *sub-periosteal abscess*, will pierce the periosteum and either come straight to the surface or only reach the surface after forming collections between the planes of connective tissue of the part, or subcutaneously. A sub-periosteal abscess may lay bare bone to the extent of 3 or 4 square inches, yet if the central blood supply is maintained the bone will live, and in the writer's experience necrosis from this cause is rare.

An abscess starting in the maxilla and tracking as just described may open near the inner canthus and be mistaken for a lachrymal abscess. When pus becomes entangled between the planes of cervical fascia, forming what may be called an *interstitial abscess*, it tracks on till assisted at some part where the fascia is firmly attached, *e.g.*, the clavicle, and there finds exit. These abscesses are chiefly due to lower molar teeth. Such an abscess may be called an *interstitial abscess*.

In connection with such an abscess it is worth noting that an unerupted tooth, *e.g.*, a lower third molar, may give no sign of its presence in the jaw by causing an enlargement of the alveolus, lying well buried in the body of the jaw, and yet give rise to pus formation.

Glandular abscesses following alveolar abscess are far from uncommon. They may be acute, forming rapidly in any of the submaxillary glands or of the upper glands of the neck; or they may be "cold," the gland enlarging at the time of the tooth trouble, but only breaking down long after the offending tooth has been drawn and all the original trouble passed away. These last are probably always tubercular, and there is evidence that the tubercle bacillus may actually gain entrance through a dead tooth.

Abscess due to Retained Fragments of Teeth.—As pointed out above, the apex of the root of a tooth is well above the alveolar portion of the jaw in the body of the bone. When such an apex is broken off and left in, the alveolus frequently closes over it and is normally absorbed, giving no indication of any portion of tooth being beneath it; and it is customary to say that such pieces will "work their way out," or at any rate remain harmlessly enclosed in the bone. This is far from being the case. An abscess may form round such a piece at any time, within a short while or only after years. In the maxilla the abscess may spread to the antrum and cause chronic antral disease; in the mandible it will slowly enlarge, giving as evidence of its presence some periodic pain (like the pain of chronic abscess of bone

elsewhere), with some swelling and tenderness of the mandible round, a sense of stiffness of the parts and tenderness on use, and some enlargement and tenderness of glands, until it involves the inferior dental nerve when it will cause the most intense "neuralgia." Hence it will be seen that these retained fragments of roots are by no means unimportant or so innocent as usually represented. Their extraction either at the time of fracture or later is a difficult matter, usually involving cutting away the outer alveolar plate till the piece is exposed; but at least a note should be made of the occurrence to aid in diagnosis in case of future trouble.

Abscesses of the lip, cheek, or tongue have been caused by abrasion by, and infection from, the broken edges of dirty teeth or roots. In the tongue they have been diagnosed as "acute ranula," and are mentioned here to draw attention to the possible source of such abscesses.

In rare cases abscesses have been described as occurring round the roots of perfectly healthy teeth, free from caries or pyorrhœa, and never subjected to trauma, and with living pulp.

ACNE. *T. Colcott Fox, M.B.*

Acne necrotica, *A. varioliforme* of Germans, *A. pilaire* (Bazin).—Although this eruption is a somewhat uncommon one, it must be known to many practitioners. R. Sabouraud[1] has contributed a memoir which illustrates the complicated pathogeny by which many skin eruptions are probably brought about. The acneiform lesions develop around a follicle, and are marked at the outset by a minute vesicular elevation around the mouth of the follicle, which in two or three days develops into a flat, umbilicated, very slightly projecting vesicle. It rapidly shrinks and condenses, without spontaneously opening, and forms a crust sunk into the skin and acquiring a brownish colour. Finally, the crust falls, leaving a conspicuous red depression, which gradually forms a varioliform scar.

Acne necrotica does not occur before puberty, and it selects the seats of micro-bacillary fatty seborrhœa, with the exception of the vertex, viz., the nose, folds between nose and cheeks, the temples, forehead, interscapular and intermammary regions. The eruption evolves by outbursts with some itching, without any special order, and recurrences may be innumerable.

Sabouraud concludes from his histological and bacteriological investigations that this perifolliculitis terminating in necrosis is developed about follicles which are infected by the micro-bacillus of fatty seborrhœa; that it is excited by a golden staphylococcus, present

from start to finish in a pure state and in innumerable numbers, and indistinguishable from the common golden staphylococcus.

The usual treatments are useless in the prevention of recurrences. For this purpose attention should be directed against the fundamental micro-bacillary fatty seborrhœa. Particular outbursts seem to be readily controlled by many local remedies, such as simple mercurial applications, as for example,

Calomel	0·30 cgms.	Vaseline	20 grms.
Oxide of Zinc	1 grm.		

or in more confirmed cases,

Precipitated Sulphur		Resorcin	1 grm.
Calomel	āā 0·30 cgms.	Vaseline	20 grms.

To prevent relapses the corneous layer should be peeled several times in quick succession by the application of

Resorcin		Vaseline	30 grms.
Salicylic Acid	āā 5 grms.		

A few drops of **Tincture of Iodine** augment the shedding of the epidermis. The scalp does better with **Pyrogallic Acid** in ointment or in ether, and alone, or joined with **Sulphur** or **Tars.**

Acne vulgaris.—Gilchrist[2] examined ninety-six pustules in fifty-five patients. Of these fifty-five cultures remained sterile, and thirty-four furnished the staphylococcus epidermidis albus. The examination of pus spread out on slides always displayed a little polymorphic bacillus. These bacilli can be cultivated by sowing the suppurative contents expressed *en masse* from the acne lesion. Glycosed agar, serum in bouillon, and potato were used: Gilchrist says this bacillus is evidently the cause of acne, and appears to be identical with that described by Unna. Creamy pus is contaminated by the staphylococci.

Chlorine Acne.—In 1899 attention was drawn by Herxheimer to a *generalised* or *universal acne* caused in certain workmen engaged in making chlorine from chloride of sodium by electrolysis. A somewhat similar eruption is known to occur from tar and other products. A generalised formation of comedones is the primary feature, and secondarily engrafted on this occur, in certain regions only, suppurative acneiform perifolliculites like acne pustulosa. It frequently involves all the sebaceous glands of a particular region or different parts which are not the sites of predilection for ordinary acne. Thibierge,[3] of Paris, who contributes a paper on this subject, finds that the lesions are not differentiated from an anatomo-pathological point of view from those of acne vulgaris. Bacteriologically, the comedones of one patient

only revealed the presence of a fine bacillus with voluminous extremities, and having all the characters of Unna's bacillus. This was accompanied by cocci. The bacilli were seated centrally, the cocci peripherally. The finding of the bacillus in this chlorine acne raises the question as to the part it plays in the production of the comedo. Herxheimer brought forward evidence to show that in addition to the external action of the chlorine, we must admit an internal action by elimination after absorption of the inspired gas.

REFERENCES.—[1] "Ann. de Derm. et de Syph.," 3rd Sér., T. x, No. 10, Oct., 1899; [2] "Amer. Derm. Assoc.," for 1899, p. 87; [3] "Ann. de Derm.," July, 1900.

ACROMEGALY. *Græme M. Hammond, M.D., New York.*

Liszynsky [1] does not believe the extract of the **Pituitary Body** has any power to relieve the distressing symptoms of this disease. He refers to the literature on this subject and finds the reports so contradictory as to be devoid of scientific value. He has used the remedy faithfully for several months in two cases without observing any amelioration of the symptoms. In both cases there was bitemporal hemianopsia as the result of pressure upon the optic chiasm by the enlarged prehypophysis. In both cases loss of vision was progressive. This would indicate that the hypophysis had continued to enlarge in spite of the administration of pituitary extract. His study of the subject has led him to adopt the view that the enlargement of the pituitary body is merely one of the symptoms, and not at all the cause of the disease. He concludes that pituitary extract has been used only empirically, that it has been proved absolutely inefficacious, and that there are neither rational nor logical grounds for its therapeutic administration.

REFERENCE.—[1] "Med. Record," June 30, 1900.

ADDISON'S DISEASE. *Prof. R. Saundby, M.D., LL.D., F.R.C.P.*

Fleming and Miller [1] have recorded a remarkable case of a family with Addison's disease, in which the mother and four children were affected. The woman was aged twenty-eight, and for seven years had gradually become more pigmented, and suffered from weakness, attacks of diarrhœa, vomiting, giddiness, and faintness. There was breathlessness on exercise with palpitation and pain over the heart, but no cardiac murmur. Her skin was extremely dark, the nipples being deeply pigmented, and there were a number of dark, almost black spots scattered over the whole body. Recently the mucous membrane of the mouth had become markedly pigmented. The eldest child, a girl, aged seven, had been getting darker since an

attack of gastritis four years ago. Her nipples were very dark, and there were black spots or moles all over the body. She had had frequent attacks of causeless sickness and diarrhœa. She suffered much from headache and was unable to endure any bodily or mental exertion. The next child was a girl, aged four, whose skin had begun to darken a year ago. She had numerous black spots all over the body and was subject to attacks of diarrhœa and sickness. The third was a boy, aged three and a half years, who had always had a dark complexion, but black spots scattered over the body appeared six months ago. He also complained of frequent attacks of sickness and sometimes of diarrhœa. The fourth child was a girl, aged two and a half years, of fair complexion, but she had been getting distinctly darker during the last four or five months. Two black spots had appeared, one on the abdomen and one on the thigh, and there had been occasional attacks of diarrhœa. A somewhat similar clinical history was recorded by the reporter in the Transactions of the Pathological Society, 1885, where the father and two children, a boy and a girl, died with symptoms resembling Addison's disease. In the only *post mortem* examination which was obtained, the supra-renal capsules were atrophied.

REFERENCE.—[1] "Brit. Med. Jour.," April 28, 1900

ADENOIDS. *W. Milligan, M.D.*

According to Cordes[1] hæmorrhage after the operative removal of adenoid vegetations may be due to any of the following conditions:—

(1,) General disease, hæmophilia.

(2,) Cardiac disease, especially hypertrophy of the left ventricle, and arterio-sclerosis. These conditions apply only to adults.

(3,) Anomalies in the course of the internal carotid. In some cases it exists beneath the posterior pharyngeal wall, on a level with the anterior part of the atlas, a bony crest which, by its prominence, renders the operation difficult in many cases. Hæmorrhage in such anomalous cases is alarming.

(4,) A preparatory application of cocaine may be followed by severe hæmorrhage.

(5,) Small shreds of vegetations remaining partly attached to the pharynx may give rise to hæmorrhage, which ceases when they are removed.

(6,) Occasionally severe hæmorrhage results in females if the operation be performed at the time of the menstrual period.

(7,) In many cases hæmorrhage occurs without assignable cause.

REFERENCE.—[1] "Deutsche Med.-Zeitung," No. 25, 1899.

ALCOHOLISM. *James Shaw, M.D.*

A. Smith,[1] by means of the X-rays and phonendoscope, has demonstrated enlargement of the heart in every case of chronic alcoholism examined by him. These patients are particularly liable to attacks of sub-acute delirium, of several days' duration, with mental stupor, or to a feeling of discomfort rapidly increasing to one of distress with pain in the cardiac region followed in some instances by epileptiform convulsions. In cases with a strong neurotic heredity, during the fourth, fifth, or sixth week of apparent convalescence, the patient becomes irritable and restless, especially in the morning, and suffers from a return of the cardiac discomfort and distress. He generally becomes depressed, suspicious, and easily upset. The heart is enlarged and the pulse-rate is 100 to 140. Resort to alcohol usually causes an epileptiform fit. If a non-alcoholic regimen is strictly maintained, and a tonic and special treatment adopted, the heart may gradually resume, and more or less permanently retain, its normal condition.

The best results in the way of treatment were obtained from **Prolonged Baths** during the attacks, **Outdoor Exercise,** including Swedish movements pursued in the open air, during the intervals, and the internal administration of **Trional** and **Tonics.** For chronic alcoholism, Bechterew[2] prescribes, in addition to **Hypnotic Suggestion,** baths and rubbings, bromides with codeine, heart tonics, such as digitalis and adonis vernalis, and general tonics, particularly **Strychnine.** As he insists, chronic alcoholism involves not only a psychosis but also a number of morbid bodily states, and he urges that it is most reasonable to apply remedies to these latter when we are attacking the disease as a whole.

References.—[1] "Lancet," Sept. 30, 1899; [2] "Jour. of Mental Sci.," July, 1900.

ALOPECIA AREATA. *T. Colcott Fox, M.B.*

Balzer and Stoianowitch[1] have obtained favourable results by applying daily **Lactic Acid** ($\frac{1}{3}$ strength).

J. T. Bowen[2] records an epidemic in an orphanage of young girls apparently spreading from one girl. The patches were of, for the most part, small dimension, irregular in outline, and often angular or linear. Histologically there was atrophy of the follicles and sebaceous glands, whilst the dermis displayed more cells than normally, and the vessels were dilated with many mast cells in their walls. No plasma cells. No microbes.

Kaposi[3] also met with an epidemic of seventeen cases in an orphanage.

We may particularly call attention to two articles, one by Brocq of an elaborate nature on *Alopecias* generally, in the recently published "La Pratique Dermatologique," and the other by Sabouraud in the "Traité des Maladies de L'Enfance," Paris, 1898.

Sabouraud, of Paris, whose opinion commands respect by reason of his ability, industry, bacteriological training, and the vast field of work at his command, tells us we have hopelessly confounded several distinct diseases. He affirms that the true *Pelade (Alopecia areata) of childhood*, the *ophiasis* of the Greeks, the *area* of Celsus, is a special malady entirely distinct from the *Pelade (Alopecia areata)* in round areas, the *Seborrhœic Pelade of adults*, the *Alopecia areata of Bateman*. They have nothing in common save the loss of hair. They differ in aspect, elementary lesions, seat, evolution, age, incidence, etc.

The *A. areata of childhood* has a special topography, commencing about the occiput, and spreading bilaterally in band form with sinuous boundaries along the borders of the scalp above the ears to the front; with secondary patches of irregular shape disseminated over the scalp; terminable at any stage, but mostly of long duration, and often ending in total alopecia; tending as a rule to spontaneous cure at puberty. It is a malady of second childhood, rarely commencing before six years of age or after twelve. Its pathogeny is quite unknown. The dermatological flora characteristic of the alopecia areata of the adult is absent. There are serious difficulties in supposing it due to neuritis or compression of any part of the sympathetic. Sabouraud does not think it contagious, and he enters into an elaborate explanation to show that the recorded epidemics have but little foundation in fact, and are mostly attributable to mistaken diagnosis. He makes a great point about diagnosing the ophiasis of childhood from the frequent little bald areas following impetigo, furuncle, traumatisms, etc.

A. areata of the adolescent and adult.—Pelade in round areas, or A. areata of Bateman, on the other hand, is rare in childhood, has a more benign course, and demands a special soil which is associated with the establishment of puberty. As the latter approaches seborrhœic infection commences on the nose and cheeks, and the dilated follicles plugged with a cocoon remind one of an orange rind. Many plugs become capped with blackish pigment derived from the *débris* of hair pigment. The larger ones are known as comedones. The skin is the seat also of a sebaceous flux. These cocoons enclose a special specific bacillus, the seborrhœic micro-bacillus. Secondary organisms enter the follicles, and are the cause of the lesions known as *Acne*. Puberty established these secondary infections tend to

cease, but the pink seborrhœic infection gains the scalp, and the common seborrhœic calvities sets in. Scraping the scalp will bring away the cocoons with their micro-bacillus. Some individuals are more resistant than others, especially females. The common pelade (alopecia areata) of the adult is nothing more than an acute seborrhœic infection concentrated on certain areas. This alopecia may commence anywhere on the scalp; it develops by peripheral extension around a centre, or by indefinite multiplication of round or oval areas like the first. The hairs fall rapidly from all the surface of a patch, and the re-growth of the hair is uniform.

The pure culture in acid glycerinated bouillon-peptone, with yolk of egg added, inoculated under the skin of the sheep, rabbit, etc., determines alopecic areas. The treatment is that of common oily seborrhœa, viz., general washings with soap followed by antiseptic frictions, epilation of a zone around each patch, removal of oil from each patch by benzoin, xylol, or ether, before each special application consisting of a stimulating preparation of **Oil of Cade, Sulphur, Pyrogallic Acid, Mercurials, Ichthyol, Resorcin, Acetic Acid.**

Alopecia areata was one of the subjects selected for discussion at the Fourth International Congress of Dermatology, but it cannot be said that any advance in our knowledge was marked.

Prof. Lassar (Berlin) after a critical survey came to the conclusion that the parasitic theory fitted best with the facts, and that the most effective remedies were usually parasiticides.

Prof. Pavloff (St. Petersburgh) had never seen any evidence in favour of the parasitic theory. His cultures yielded nothing or else the staphylococcus pyogenes albus and aureus.

Dr. Norman Walker (Edinburgh) in a certain proportion of seventeen cases had isolated an organism very like that described by Sabouraud, but the cultures were black instead of brick red.

Dr. Sabouraud (Paris) repeated his views as to the distinction between ophiasis and seborrhœic alopecia areata, a distinction in which Pavloff did not agree.

It is curious that acetate of thallium which seems a fairly successful remedy in cases of excessive sweating should not infrequently be followed by complete loss of hair. Jeanseline and Giovannine discuss the subject apropos of cases.[4]

Jacquet[5] says alopecia areata demands a local and general treatment.

Locally one can put aside all antiseptic treatment and seek to awaken vitality in the patches, and for this purpose **Cutaneous Massage** is most valuable. The tegument of the head or face is "saisi, plissé,

pétri, malaxé," in all senses between the fingers, gently at first, then progressively strengthened. This should be done three, four, five, six times or more daily over the whole surface, not limiting it to the bald areas. Thus is obtained a state of tegumentary hyperæmia and hyperthermia which is the principal condition of the cure. Epilation and repeated sharp brushing with a hard brush imbibed with an alcoholic preparation, with or without a lubricant, as castor oil or glycerin, should be added. This treatment is effective, and can be joined to that with well-known irritants such as oil of cade, acetic acid, gaultheria oil, essence of wintergreen, etc.

But according to Jacquet, alopecia is the repercussion of some profound trouble, and this it is necessary to seek out, and, if possible, treat. Such profound troubles may range from excessive growth to dentition troubles, through psychical shocks, visceral lesions, vices of general nutrition, auto-toxæmia, and their nervous reactions.

REFERENCES.—[1] "Rev. gen. de clin. et de thérap.," Feb., 11, 1899, p. 81; [2] "Journ. Cut. and Gen.-Urin. Dis.," Sept., 1899; [3] Quoted in "Ann. de Derm.," Oct., 1899, p. 866; [4] "Ann. de Derm. et de Syph.," vol. ix., Nov. 1, 1898, and "Derm. Zeitschr.," Dec., 1899, S. 695; [5] "Ann. de Derm.," Aug., Sept., 1900.

AMENORRHŒA. (See "Menstruation.")

AMPUTATIONS. (See "Foot," "Hip," "Knee," "Shoulder," "Thigh," etc.)

ANÆSTHESIA. *H. Bellamy Gardner, M.R.C.S., Eng.*

Several papers of interest have appeared on the general questions involved in the administration of anæsthetics during the past year, and the substance known as chloride of ethyl has been experimented upon as an addition to those drugs already in use for inhalation.

Among the most important contributions may be mentioned a treatise on the administration of anæsthetics to children by Drs. W. S. McCardie and C. F. Marshall,[1] in which the absence of chronic disease of the lungs, heart, and kidneys in children is referred to as rendering these patients more favourable subjects for general anæsthesia than adults. The further statement is made that chloroform is by no means so devoid of risk in children as is generally supposed

One reason given for this opinion is that: "reflex action is more marked, and also more quickly abolished by anæsthetics than in adults. This results in the first place in increased danger from such reflex acts as spasm of the glottis, which is a frequent source of danger. In the second place, the early abolition of reflex action results in the disappearance of certain guides, which are habitually used in the adult;

more especially the corneal and conjunctival reflexes, which, in children, are lost some time before anæsthesia is complete. These reflexes are therefore of little use as a test of anæsthesia. A more reliable guide is that of smartly pinching the skin of the inner side of the thigh, and of rubbing the ribs. If no movement results, the patient may be safely considered to be 'under.'"

In preparing children for anæsthesia, the authors consider that no child under eight or ten years of age should be left more than three hours without food, even before a major operation. Whey is recommended as by far the best thing to give young children for the last meal, as it is easily absorbed and leaves no residue. In older children, Bovril or good meat broth may be given; but "milk especially is a snare and a delusion, for the curds will, when the child is under the influence of fear, often remain undigested in the stomach for several hours."

During the operation, children being so liable to shock, a hot-water bed is of great advantage, and, besides this precaution, the authors say: "we wish to draw special attention to the practice of covering large portions of the child's body with wet antiseptic cloths. These rapidly become cold during the course of the operation, so that the child is practically operated upon in a cold wet pack. As much as possible of the body should be wrapped in flannel." In choosing the anæsthetic to be used, ether, A.C.E mixture, or E_2C_1 (this latter being a mixture of two parts of ether to one part of chloroform) are recommended in preference to chloroform, owing to the danger of cardiac dilatation under this latter anæsthetic during the early stages if accompanied by crying and struggling.

In the new edition of Dr. Dudley Buxton's work on Anæsthetics,[2] the use of oxygen with ether is thus described: "In cases in which the induction presents unusual difficulties from dyspnœa, spasm, cough, holding of the breath, struggling with cyanosis, in alcoholics, and in persons of feeble vitality, the repeated filling of the bag with oxygen removes all difficulty, and rapidly induces a profound and quiet anæsthesia. The narcosis so obtained is more profound than can be ensured when using ether by itself, as the hyper-oxidation of the tissues enables more ether to enter the circulation than could otherwise occur without danger to the nervous centres hampered by deoxidised blood."

I have adopted Dr. Buxton's method of introducing oxygen with ether in certain cases which seemed to be suitable for the purposes indicated, and concur entirely in the opinions he expresses. I regard the suggestion as a valuable one, for I also find muscular

relaxation under the combination to be more complete than with ether alone.

Owing to present-day advantages there is a tendency towards prolonged operations which involve considerable shock to the patient's system. Shrady,[3] in an article on this subject points out that "we must not forget that prolonged adminstration of anæsthetics is, independently of the operation, a means of shock in itself. While ether may tend at first to modify shock its prolonged use adds to the depression of the patient. The same may be said for chloroform. The body temperature is lowered if the administration of ether continues longer than an hour or an hour and a half."

I am so cognisant of this fact that I regard all operations lasting much over an hour as likely to produce a certain amount of depression in respiration, in circulation and in temperature, and always give warning to the operator when these symptoms begin to exhibit themselves. All patients should be warmly clad and covered during anæsthesia. This rule is not at all generally observed and should be insisted upon and acted up to by every careful administrator. The temperature of the operating room should be always 65°F. at the least, and 70° if possible. Blankets should cover the feet and legs, and also the chest and arms when the abdomen is being opened. Frequently, wet cloths only lie upon the chest, producing an exceedingly dangerous depression of temperature. If pneumonia or bronchitis does not supervene, reaction and recovery are unnecessarily slow, and in the meantime the patient is in a critical condition of collapse. I have in one case administered ether for three hours during the removal of an enormous fibroid tumour of the uterus and in another instance have given chloroform for a similar period of time during a severe operation upon the jaws and cheeks. In both cases hot bottles were placed to the patient's feet, and the latter were raised above the level of the head during the second hour of operation, the whole body also being warmly covered, with the result that shock was very slight and recovery rapid; but such lengthy procedures are rarely necessary, and patients whose general condition is not good may frequently flag with symptoms of shock within half an hour of the induction of anæsthesia. It is therefore important to bear in mind that the shorter the operation the quicker the recovery and the less after-effects of any kind to be anticipated.

Ethyl chloride has been lately adopted by German, French, and American observers for the purposes of general anæsthesia in short surgical and dental operations. Lothiesen[4] claims to have made his first trial with this substance in August, 1896. This case, in which a

girl had a whitlow opened under the influence of ethyl chloride, applied by using a sprinkling of the drug upon an Esmarch's mask, passed into complete anæsthesia in one minute, and recovered a few seconds after removal of the anæsthetic without unpleasant after-effects. At the time of writing in 1898, Lothiesen had conducted one hundred and seventy administrations of this drug without any untoward incidents occurring.

An inhaler devised by Breur, resembling Clover's ether inhaler, and having an accurately fitting facepiece he considers to be the best. "About 3 to 5 grammes of ethyl chloride are sprinkled on to the gauze. Then the patient is asked to breathe quietly and the mask is put over his face and lightly pressed on so that it is air-tight. This quantity of ethyl chloride suffices for about three to four minutes; if the narcosis is required to last longer one must sprinkle the gauze afresh." Anæsthesia is very rapid—one minute or a minute and half in appearing—the excitement stage is generally absent, corneal and pupillary reflexes are generally fully preserved, the eyeballs may move and the eyes seem to "look about." The pulse rate sinks a little, but the pulse is otherwise said to be unaffected. Respiration is more rapid, but cyanosis is rare. Recovery is very rapid—vomiting was only observed in eighteen out of the one hundred and seventy cases, and in these was slight.

The longest duration of anæsthesia was twenty-five minutes, obtained by adding more of the drug from time to time.

REFERENCES.—[1] "Treatment," April, 1900; [2] "Anæsthetics, their Uses and Administration," p. 135, 1900, H. K. Lewis; [3] "Med. Rec.," July 22, 1899; [4] "Arch. f. klin. Chir.," 1898.

ANÆSTHESIA (Local). *Priestley Leech, M.D., F.R.C.S.*

Barker[1] gives his further experience of operating under local anæsthesia with eucaine β. No ill-effect has followed the use of normal saline solution with 1 in 1000 of eucaine β added; no toxic troubles have arisen even when 5 or 6 ounces of the solution have been used, and the primary union of wounds has not been interfered with. Children and timid adults are unsuitable patients for local anæsthesia, and it is better to give a general anæsthetic. If the region to be operated on is acutely inflamed it is difficult, if not impossible, to render it insensible. It must also be remembered that the injection has strictly a local action, and in many operations it is impossible to render all the structures which we may manipulate insensible, *e.g.*, in resection of the intestine the mesentery may be pulled on and produce a sensation as if the abdomen were pressed on or the patient may complain of griping. Another point he noticed is that with *rapid* cuts and

snips a twinge of pain is felt on division of the small vessels, whereas when the division is done more deliberately and slowly no pain is complained of. Five minutes after injection the tissues are ready for operation, and in about twenty minutes they will require fresh injection. Some kind of screen to prevent the patient seeing the operator is desirable. Deliberate dissection and handling must be cultivated, and all dragging and tearing avoided as far as possible. In some excitable patients a preliminary dose of morphia has seemed beneficial. He gives a list of fifty-three operations done under local anæsthesia.

Cushing[2] says that twenty-four herniotomies have been done under cocaine or eucaine without pain, and in young men it has become the method of choice. He points out the following advantages: avoidance of unpleasant or dangerous sequelæ; no vomiting or retching; urinary disturbances are less likely to occur; no necessity for change of diet; avoids the risks of general anæsthesia in patients not suitable for chloroform or ether. More time is taken up in the operation, and in many cases there is some pain and the operation is more difficult.

Lower,[3] at a meeting of the Cleveland Medical Society, reported a case of amputation at the middle third of the left leg under anæsthesia, produced by injecting cocaine into the spinal cord, as originally suggested by Bier. Between the last dorsal and the first lumbar vertebræ he injected a syringeful of one-fifth of a 1 per cent. solution of cocaine. In three minutes the man had complete anæsthesia of both foot and leg. Motion was not entirely abolished, but amputation was performed without the least evidence of pain: besides this there was no shock and the pulse did not vary beyond 64 to 72 throughout the entire operation. Wenner suggested that Lower had injected the fluid into the sub-arachnoid space and not into the cord, and Lower admitted that he probably had done so, although he had injected cocaine into the spinal cord of dogs which had all recovered, and while some change in the cord was found microscopically it was not so pronounced as to affect the animal.

Seldowitsch[4] reports four cases where he used Bier's method. Bier had recommended 0·005 gramme, but Seldowitsch had used 0·01 gramme injected into the spinal canal. Complete anæsthesia resulted in every case lasting an hour or more. The operations performed were: a Pirogoff amputation of the foot; an amputation of the leg and extirpation of inguinal glands; removal of an extensive skin carcinoma in the neighbourhood of the knee, and excision of enlarged inguinal glands; and a resection of the knee for tuberculosis. Sensation returned in every case within a short time after the operation was over, and no serious after-effects followed. The method,

however, is not justified unless the production of general anæsthesia by ether is impossible. The cases reported are all such as would have been far more safely conducted when the patient was under general anæsthesia.

Hamilton[5] thinks β eucaine is the most satisfactory drug for local anæsthesia. He has gone back to a 2 per cent. solution. He generally uses 20 minims of the solution in three or four places.

The "Practitioner" of August, 1900, contains an article on the employment of the injection of cocaine into the sub-arachnoid space in the lumbar region. This method has been tried by M. Tuffier, surgeon to the Lariboisiére Hospital. He has used this method in over eighty cases, and M. Edouard Cadol, in his thesis before the Faculty of Medicine, gives details of the first twenty-three operations performed under this method. The following is a brief summary of his conclusions: The area of anæsthesia varies directly with the dose of cocaine and inversely with the age of the patient; with the same dose the anæsthetic area is greater in the younger patients. Tuffier never used more than 4 centigrammes of cocaine as a dose. With doses of 5 to 15 milligrammes the loss of sensation to pain lasted on the average from thirty to fifty minutes; with doses of 15 to 25 milligrammes the average duration was one hour to one hour and forty minutes, and with larger doses this time was exceeded. In children and young persons the analgesia appears more rapidly than in adults; in one case it was instantaneous, while in other cases it came on in four to seven minutes after the injection. In older people it began eight to ten minutes after the injection, while in some cases the interval was longer. As the anæsthesia commences it is accompanied by pricking sensations in the toes, tingling in the calves and numbness of the lower limbs. There is no local vaso-motor disturbance nor any local secretion of sweat. In man, as in the lower animals, the analgesia begins in the extremities of the lower limbs, and then invades the lower limbs, the pelvis, loins, and lastly, the umbilical region. The analgesia is both superficial and deep. There is often sensibility to pain lost before that to heat and cold, as in syringomyelia. The analgesia disappears in the reverse order, *i.e.*, it disappears first at the umbilicus and last at the toes, and is occasionally accompanied by pricking and tingling sensations. The general symptoms observed during the analgesic and post-analgesic periods are: sweating, slight dilatation of the pupil, nausea, trembling of legs, headache, vomiting, shivering, and tachycardia. These phenomena are slight and transitory, and have as a rule disappeared by the evening of the next day. These symptoms are more frequent

with a larger dose, and with the smaller doses are often entirely absent.

The technique of the operation is as follows: The patient is laid on one side, say on the left side, he is told to round his back, flexing the legs on the thighs and the thighs on the abdomen, and a cushion is placed underneath his flank. In this way the spinous processes of the vertebræ are separated to the greatest extent, the space between being $1\frac{1}{2}$ cm. ($\frac{9}{16}$ inch). The lumbar region is then cleansed. The surgeon then finds the posterior inferior iliac spines situated below the great sciatic notch; he joins the spines by a transversal line which passes at the level of the fifth lumbar vertebræ; it is below this line he will look for the sacro-lumbar fossa, and from this point count the lumbar spinous processes till he reaches the third or fourth lumbar interspace, which is the seat of election. When the seat of election has been determined it is marked with tincture of iodine and the skin is rendered anæsthetic by means of ethyl chloride; this prevents any involuntary movement which would bring the processes together. The needle should be strong, three and a quarter to four inches in length; in thin young children an ordinary hypodermic needle suffices, but as a rule it is too short and fragile.

The surgeon now finds the spinous process corresponding to the space selected (the third or fourth lumbar space); keeping his finger on the spinous process he now inserts the needle $\frac{1}{2}$ cm. to its outer side to the right or left of the middle line as the case may be. The needle is held between the thumb and index of the right hand and pushed without violence from behind forwards, from without inwards, and from below upwards; these directions must not be exaggerated; the obliquity of the needle inwards and upwards must be very slight. The needle may be arrested by something resistant, *i.e.*, one of the two bony laminæ, and it is nearly always the superior lamina of the space the surgeon wishes to traverse. The needle must be withdrawn a little and pushed in another direction. When the surgeon has traversed the inter-laminar space he must watch the external orifice of the needle as a drop of cerebro-spinal fluid wells up as soon as the sub-arachnoid space has been reached. The surgeon must go slowly as he may come against the posterior surface of the body of the vertebræ and think he has hitched against the lamina. The escape of cerebro-spinal fluid is *the sign*, without which cocaine must never be injected. When 8 to 10 drops of cerebro-spinal fluid have welled up through the needle the time has come to inject the cocaine. The cocaine introduced must not become immediately diffused throughout all the cerebro-spinal fluid and the drug must not escape upwards towards

the higher nerve centres. The injection must be made very slowly, the solution must be freshly prepared, the temperature of the solution must be about 37° C., and the quantity of cocaine injected must never exceed 4 centigrammes. The solution must be a weak one, either 1 in 100 or 1 in 200; 4 centigrammes of a solution of 1 in 200 would represent 8 cubic centimètres of liquid. The solution of cocaine is sterilised by Pasteurisation, *i.e.*, heated several times in succession in a water bath at a temperature never exceeding 60° C. When the injection is completed the needle is withdrawn and collodion placed over the point of insertion.

Tuffier has performed (among others) the following operations under this method of anæsthesia: amputation of thigh, suture of patella, resection of knee, radical cure of hernia, extirpation of the rectum, perineorrhaphies, incision into the pouch of Douglas for pyo-salpinx, and four vaginal hysterectomies.

W. Milligan, M.D.

Aldrich[6] uses a solution of **Suprarenal Extract** made up as follows: Suprarenal extract 1, Boric acid 1, Sterilised water 48. The solution should be made up when required. Its action is most reliable, and it does not injure the tissues operated upon.

Swain[7] finds that an aqueous extract of suprarenal gland is a powerful local vaso-constrictor, and a contractor of erectile tissue. The solution which he uses is prepared from the dried saccharated glands of sheep by adding 10 to 20 grains to ½ a drachm of cold water. The addition of a small quantity of alcohol increases the durability of the solution.

REFERENCES.—[1] "Lancet," Jan. 20, 1900, p. 156; [2] "Ann. Surg.," Jan. 1900; [3] "Phil. Med. Jour.," March 31, 1900; [4] "Cent. f. Chir.," Bd. xxvi., 1899, p. 110; [5] "Lancet," Aug. 26, 1899; [6] "Amer. Journ. of Med. Sci.," Feb., 1899; [7] "Brit. Med. Journ.," March, 1899.

ANEURYSM. *Priestley Leech, M.D., F.R.C.S.*

Lediard[1] showed a man, aged thirty-nine, from whom he had removed a subclavian aneurysm on Jan. 21st, 1900. Ligature of the first part of the subclavian had been done on April 14th, 1899, without benefit. The first part of the axillary was also tied on Aug. 4th without result; the arm became useless and painful, so that interference became imperative. Two and a quarter inches of the clavicle were removed and the operation only lasted three-quarters of an hour. Recovery of the arm was immediate, and the wound healed without trouble. The aneurysm was the size of a hen's egg, and the under surface of the clavicle was somewhat worn from pressure.

REFERENCE.—[1] "Brit. Med. Jour.," May 5, p. 1087, 1900.

ANKYLOSTOMIASIS. *James Cantlie, M.B., F.R.C.S.*

B. K. Ashford,[1] Assistant Surgeon U.S. army, reports twenty cases of severe anæmia met with in Puerto Rico. In the stools the ova of the ankylostomum duodenale were found, and soon after the administration of thymol the male and female parasites were evacuated. This treatment seems to have cleared up the obscurity attaching to what has been called "Puerto Rican anæmia" or "tropical chlorosis." The condition of life of the working classes on the plantations in Puerto Rico is one of overcrowding and total neglect of sanitation; fæces are distributed over the earth wherever the individual happens to be while at work, and even when at home directly on the ground. Fæces pollute the very houses, and in the town of Ponce, where there are 40,000 inhabitants, there is no sewerage. Closets and kitchens are in conjunction in many houses. The island is one of steep mountains, deep ravines, and broad plains near the sea. Heavy rains wash the larvæ from each fæcal deposit into these watercourses, and this muddy water is probably one source of contamination. The mud on the unwashed hands of the labourers is probably another source of infection, although the larvæ have not yet been demonstrated in the water or in the mud. The blood examination shows that the hæmoglobin average and colour indices are very low. Eosinophilia is in some cases marked. Poikilocytosis is common. No treatment is of any value unless the ankylostoma are removed.

Dr. Strachan[2] discovered the existence of ankylostomiasis in Lagos West Africa, in natives suffering from "anæmia" and "dropsy." Dr. James Matthias[3] describes an epidemic of ankylostomiasis amongst the underground workers in the Kimberley and De Beers mines. It is probable that this disease has existed in the Kimberley mines since 1890, but it was only in 1897 that the ova of the ankylostomiasis was first found. Before that period the ailments from which the miners suffered were ascribed to "the smoke of bad dynamite." Dr. Matthias, however, is convinced that the action of this parasite is most pernicious; and he believes that ankylostomiasis is now an endemic disease in South Africa.

Dr. H. A. Alford Nicholls[4] C.M.G., states that Galgey, in 1897, asserted that ankylostomiasis is endemic, and prevalent all over the West Indies. The ankylostomum, however, was discovered in the West Indies by Dr. Strachan as far back as 1883.[5] In some islands the disease is much more severe than in others, and Dr. Wm. Macdonald[6] declares that in Antigua it is very severe, owing in all probability to the poverty of the people through the failure of the sugar industry, and to the want of sanitation. In

Dominica, Dr. Nicholls describes a less severe infection, and is careful to point out that although ankylostoma and their eggs may be found in the fæces of many residents, still that does not constitute ankylostomiasis, which is the result of repeated infections. He summarises the facts concerning ankylostomiasis as follows: (1,) That the worms in their larval stages, are intimately connected with the soil; (2,) That the adult worms develop from larvæ after the larvæ are introduced into the digestive canal of man; (3,) That the worms act as minute leeches, extracting blood, and causing little bleeding points by their bites; (4,) That owing to their minuteness a multitude of the worms are necessary to produce any serious deterioration of the vital organs; (5,) That the worms cannot multiply within the body, and that, therefore, in most instances, fresh infections are necessary to produce disease; (6,) That as the larvæ are developed in the soil from eggs deposited thereon in human dejecta, certain obvious and simple sanitary measures are all that are necessary to arrest the propagation of the parasite, and therefore to rid any district of ankylostomiasis.

Dr. C. P. Kennard[7] states that "the occurrence of ankylostomiasis is so common in British Guiana that there is a great tendency to put down all cases of anæmia to it." "In nearly every post mortem more or less ankylostoma are found, no matter what was the cause of death." Dr. Kennard found in some cases that **Calomel, Santonin,** and **Quinine** does more good than **Thymol.**

G. M. Giles,[8] Major, I.M.S., states that the anæmia caused by the presence of ankylostoma in the intestine is insufficiently accounted for by the small amount of blood the parasites abstract, and believes that the dyspepsia, due to the damage the parasites cause to the mucous membrane, has a good deal to do with the lowering of the vitality and the anæmia.

Giles succeeded in cultivating the ankylostomum outside the body, and demonstrated the fact that the full history of the parasite is an example of dimorphism, a heterogenesis. He is of opinion that the kala-azar of Assam is ankylostomiasis. C. F. Fearnside,[9] Captain I.M.S., found by examining new arrivals and old residents in the Indian jail of Rajahmundri, that the fæces of new arrivals affected with ankylostoma numbered 72 per cent., whereas prisoners who had been confined for six months and over had returned 58 per cent. only as affected. Food and environment therefore seem to have a direct bearing upon the number of the population attacked.

Leonard Rogers,[10] Captain I.M.S., has long maintained that kala-azar, is due to malaria and not to the presence of the ankylostomum in the intestine. He points out that the anæmia may be due to

malarial cachexia, even although the ankylostoma may be present in great numbers ; but on the other hand anæmia may be directly due to long continued small losses of blood when a relatively small number of parasites are present, or to a greater loss of blood due to a larger number of ankylostoma acting for a shorter time. In anæmia caused by ankylostomiasis **Iron** is indicated in the treatment ; in malarial cachexia iron is useless, the best results being obtained from arsenic and bone marrow.

REFERENCES.—[1] "New York Med. Journ.," April 14, 1900 ; [2] "Journ. Trop. Med.," March, 1899 ; [3] Ibid., Oct., 1898, from "South African Med. Journ. ; [4] Ibid., Oct., 1900 ; [5] Ibid., Aug., 1900 ; [6] Ibid., July, 1900 ; [7] "Brit. Guiana Med. Ann.," 1899 ; [8] "Brit. Med. Journ.," Sept., 1, 1900 ; [9] Ibid. ; [10] Ibid.

ANTISEPSIS. *Priestley Leech, M.D., F.R.C.S.*

Sterilisation of the Hands.—Mikulicz[1] says the officinal spiritus saponitus of the German Pharmacopœia is an excellent thing for sterilising the hands. It is composed of 6 of olive oil, 7 of caustic potash, 30 of alcohol, and 17 of water. Experiments with staphylococcus aureus prove that this solution has a greater sterilising power than 1 in 1000 of perchloride. Previous washing with water inhibits rather than increases this power.

The method employed is as follows : (1,) If the hands are very dirty they are rubbed with sterile cotton wool soaked in the solution until they appear clean ; (2,) The nails are cleansed with a Braatz's nail cleaner ; (3,) The hands are scrubbed with the soap spirit and a nail brush, sterilised by boiling for five minutes. The soap spirit has the following advantages : It saves time ; it is odourless, non-poisonous and unirritating ; it appears to penetrate the epidermis for some depth ; it is cheaper than the use of pure alcohol after washing with soap.

Freeman,[2] from a consideration of experiments of his own and of other observers, has come to the following conclusions : (1,) None of the methods suggested can be absolutely relied on. Many positive results are due to faulty technique, *e.g.*, the culture media being impregnated with antiseptics, the skin hardened with alcohol temporarily, or the hands not being subjected to sufficient maceration and friction in the culture medium ; (2), Much may be accomplished by sweating the hands in a hot air oven, by wearing rubber gloves for some time prior to an operation, or by immersing the gloved hand in hot water. Mere prolonged soaking in hot water has some favourable effect, but is not so efficacious as dry hot air. This method cannot be extensively employed owing to its inconvenience, and it is

difficult to understand how the sweating method can dispose of all the micro-organisms beneath the nails ; (3,) Excessive brushing beneath the nails, even as much as the sensitive tissues will tolerate, seems merely to stir up the bacteria when carried beyond a certain point ; (4,) The only really reliable means of rendering the hands aseptic is to encase them in sterilised rubber gloves, but if the gloves become torn the danger of infection is considerable owing to the bacteria that have accumulated beneath from perspiration. Coating the hands with various substances has been tried and found wanting. Cotton gloves, if frequently changed, although soon contaminated by the exudations from the skin, may do some good by filtering out the bacteria.

Senger[3] investigated the value of alcohol. Fürbringer states that alcohol used alone without carbolic acid or corrosive sublimate is much more efficient than when these agents are combined with it. Senger shows that as regards staphylococcus aureus alcohol has simply an inhibiting effect on its growth, which is distinctly more marked with a 50 per cent. solution than with absolute alcohol alone. He thinks the reaction method of skin disinfection yields by far the best results. The method is as follows : Brush the skin for five minutes with an alkaline soap and hot water as hot as can be borne ; it is next brushed with weak (50 per cent.) alcohol for two minutes ; then for two minutes with a warm 2 to 5 per cent. solution of hydrochloric acid ; then a minute with a $\frac{1}{2}$ per cent. solution of potassium permanganate ; and finally with an 8 per cent. solution of sulphurous acid until the manganese colouration has entirely disappeared. These reagents are less irritating to the skin than the carbolic acid and corrosive sublimate solutions ; this is of some importance as chapped and fissured hands are difficult to sterilise. A similar method with oxalic acid and permanganate of potash has been used in the John Hopkins Hospital with admirable clinical results.

Summers[4] urges the use of sterilised rubber gloves or gauntlets after cleansing the hands by some good method. He says the wearing of rubber gloves should be the rule : (1,) In obstetric practice ; (2,) In operating on all forms of septic cases : (3,) In the examination and treatment of all forms of septic infectious diseases such as erysipelas, septicæmia, pyæmia in which the hands come in contact with primary or secondary foci of infection—and this rule applies to the nurse also ; (4,) In operating on clean cases soon after operating on infected ones ; (5,) In abdominal operations following vaginal operations this may be reversed, wearing the gloves during vaginal work and taking them off or putting a fresh pair on for the abdomen ;

(6,) In examining fresh wounds after recent examinations of or operations on dirty cases; (7,) In all forms of rectal surgery. Gloves also protect the physician and surgeon against infection.

Sterilisation of Catgut.—Minervini[5] has been investigating the properties and preparation of catgut for surgical purposes. His results are as follows: *Tensile strength of the gut:* alcohol below 75 per cent. weakens it; absolute alcohol makes the gut hard and stiff so that it does not tie readily. Chloroform, xylol, ether, and oil of turpentine have the same effect; glycerin moderately weakens the gut. Fatty substances (olive oil, castor oil, oil of juniper) make the gut somewhat more elastic and do not lessen its strength. Formalin in 1, 5 and 10 per cent. solutions diminishes the tensile strength, but not much. Chromic acid in strong solution lessens the strength; in strengths of ½ to 2 per cent. it diminishes the strength but leaves it in excellent shape for ligatures. The best solution is one-half of 1 per cent. *The effect of heat:* Boiling alcohol does not lessen the strength of gut, but makes it stiff so that knots are not readily tied; a weak solution of alcohol markedly diminishes the strength; boiling ether and chloroform act in the same way. Turpentine, xylol and other media, which boil above 100° C., markedly weaken the gut, but if the water has been previously removed, the weakening effect is far less marked. He concludes water always weakens the gut; this action can be lessened but not prevented by the influence of formalin and chromic acid. Chemicals which boil at a temperature below 100° C. do not alter the gut if they contain no water. In different fluids which boil at a point higher than 100° C. (xylol, cumol, etc.), provided the gut has been entirely freed from water, it is not materially altered until the temperature reaches 150 to 160° C.; above this temperature profound alterations occur.

Efficiency of antiseptics in sterilising gut: Alcohol, ether, chloroform, and carbolic acid at ordinary temperatures were absolutely unreliable. Oil of juniper rendered gut infected with staphylococcus germ free after three days; to destroy anthrax bacilli thirty days are required. Bichloride solutions 1 in 1000 are efficient both against anthrax and pus germs in one hour. Solutions of the same strength in alcohol or ether require twenty-four hours to exert as marked an effect. A 1 per cent. watery solution of formalin destroyed the staphylococcus in six hours, and twenty-four hours' exposure to a 4 per cent. solution was required to destroy the anthrax bacilli. A ½ per cent. solution of chromic acid destroyed the staphylococcus in one hour, and 1 per cent. solution was required for six hours against the anthrax bacilli.

In oil of juniper heated to 130° C. the infected pieces of gut were entirely sterilised in thirty minutes. Carbolic solutions in alcohol were unsatisfactory. Catgut soaked in 4 per cent. formalin solution for twenty-four hours, then in flowing water for twenty-four hours, and finally boiled in distilled water for fifteen minutes, was absolutely sterile, as was also gut treated in the same way with ½ per cent. of chromic acid in place of formalin. The author concludes that gut can only be rendered sterile by heat whether dry or conveyed by means of alcohol, ether, chloroform, etc., exercised under normal pressure, when a temperature of 140° to 150° C. is reached and maintained for some hours. Alterations of gut occur about this temperature, and thus the aseptic preparation of the gut is not practicable. Methods depending on the action of carbolic acid or of the aniline colours are always unsatisfactory. If properly employed and for a sufficient length of time, sublimate, formalin, chromic acid, and oil of juniper secure absolute sterility. Gut is found unabsorbed in the tissues of the dog four months after its introduction. Gut prepared by dry heat, oil of juniper, and formalin is much more rapidly absorbed than that subjected to sublimate and chromic acid methods.

Darling[6] comes to somewhat different conclusions. He says catgut can be sterilised at dry heat by wrapping the different strands in several layers of paraffin and sterilising for three hours at 140° C. He says it loses little of its tensile strength; dry paraform gas is of doubtful value for the sterilisation of catgut; methods of sterilisation which involve soaking in antiseptic solutions tend to weaken catgut to a greater or less degree.

REFERENCES.—[1] "Deut. Med. Woch.,' June 15, 1900; [2] "Ann. Surg.," Oct., 1899; [3] "Cent. f. Chir.," No. 27, 1899, and "Arch. f klin. Chir.," Band 59, Heft 2; [4] "Jour. Amer. Med. Assoc.," July 8, 1899; [5] "Deut. Zeit. f. Chir.," Sept., 1899; [6] "Jour. of Boston Soc. of Med. Sci.," May, 1899.

ANTRAL DISEASE. (See "Nose.")

ANUS (Fissure of). (See also "Rectum.")

Herbert Wm. Allingham, F.R.C.S.

F. C. Wallis[1] says the typical condition is that the ulcer has at the end of it a small tag, which is called Van Buren's sentinel pile, though in reality it is not a pile at all. If you pull this down with the forceps you will see the narrow surface of the ulcer: and if the patient allows you to pass your finger to the other extremity you will find another sentinel pile at the other end. The anatomical cause of that is that there are certain reduplicated folds of mucous membrane in the bowel called Houston's valves. One of these gets torn down for some

reason, and gradually as the contents of the rectum are forced out they press against the valve and tear it; next time it gets torn a little more, and so gradually the fissure is produced. This is the one condition for which patients come and urge the surgeon to operate upon them, so great is their agony. The remedy is one of the simplest in the world. This small pile is removed, the sphincter is well stretched, and then the knife incises right through the base of the ulcer and also through a portion of the external sphincter. It is not necessary to divide it all. Mr. Wallis generally divides most of it, and dresses the wound with $\frac{1}{300}$ perchloride, and keeps the patient's bowels relaxed.

Domner[2] speaks highly of the use of the **Galvanic Current** in cases of anal fissure with hæmorrhoids. One electrode is inserted beyond the sphincter, and the sitting is not prolonged beyond five minutes, from two to four applications being sufficient to cure old cases which have resisted the ordinary methods of treatment. The dosage is not given.

F. C. Wallis[3] says there is a serious danger, over and above that of the daily pain, in allowing these fissures to go unrelieved. On account of the pain which follows the daily evacuation, patients put off the evil moment as long as possible. The lower bowel becomes loaded with most septic material, which starts by infecting the fissure, and so getting into the subcutaneous tissue. Very soon the ischio-rectal fossa falls a victim, and here, owing to the peculiar conformation of the fossa, a large amount of pus may accumulate before any signs of tension make the patient feel that it is necessary to "see some one." By the time that point is arrived at, the whole of one or both fossæ may be tense pus sacs, and the bowel may give way high up.

REFERENCES.—[1] "Clin. Jour.," Jan. 11, 1899; [2] "Jour. de méd. de Bruxelles," 1898, No. 3; [3] "Clin. Jour.," Jan. 11, 1899.

ANUS (Prolapse of). *Herbert Wm. Allingham, F.R.C.S.*

Treatment by Ice Tampons.—Hajech[1] recommends for the treatment of chronic prolapse a procedure which has always been successful in his hands, even in the gravest cases. It consists in the introduction of fragments of **Ice** into the anus during the reduction of the prolapse. These suppositories should be cone-shaped, artificially frozen, measuring 7 to 8 cm. in length, and in diameter at the base 2½ to 3 cm. One of these is enveloped in a piece of iodoform gauze, which should cover it like a glove-finger, and is pushed into the centre of the prolapse, which can thus be readily reduced, the ice and gauze being carried up with the protruded bowel. Usually no painful sensation is

produced. After each defæcation a new gauze and ice tampon is introduced. The prolapse occurs more and more rarely, and soon ceases. This result is due to the relief of congestion and the increased contractility of the rectal tissues under the influence of the mechanical and thermic excitation provoked by the ice.

REFERENCE.—[1] "Revue Mensuelle des Maladies de l'Enfance," Nov. 1899, p. 525.

ANUS (Pruritus of). *Herbert Wm. Allingham, F.R.C.S.*

F. C. Wallis[1] says, when you see a condition of pruritus ani well marked you will notice that the skin all round the margin of the anus is very much discoloured. In recent cases it is red and much torn by constant scratching, and there is a watery serous exudation mingled with the condition, setting up a local eczema. In chronic conditions—that is to say, where the pruritus ani has been going on for some years—the skin undergoes a marked change; it is found in those cases to be of a dead white colour, having lost all its properties as skin, and assumed more the appearance of parchment. A great deal of stress has been laid upon this state because it is said to be a marked feature of pruritus. As a matter of fact, it is not. Wherever chronic inflammation of skin occurs, there you will have deposits of inflammatory products, and fibrous tissue will be interspersed amongst the ordinary tissue, so that eventually the skin in that part is fibrous tissue with ordinary epidermis over it. In treating this condition the first thing is plentiful ablution. Amongst ordinary hospital out-patients washing, as a rule, is a luxury, and local washing of this particular part is practically unknown. Therefore one of the instructions to be impressed on the patients is this washing of the parts night and morning, and always after the bowels have acted.

These patients should also be instructed to get a double handful of bran, put it into a gauze bag, and place it in a hip-bath, the patient getting into it as warm as he can bear it ten minutes after the bran has been been put in. He should then sit in it with his buttocks divided as wide as he can, sitting on the gauze bag for fifteen to twenty minutes. On getting out of the bath he should thoroughly dry the parts, and dust them over with a powder consisting of equal parts of zinc oxide, boric powder, and starch. Then a fairly firm pad of cotton wool should be applied closely by means of a T-shaped bandage, and should be worn at night-time. This reduces the amount of external irritation; and if there is no ulcer or fissure inside, it will go a long way towards cure.

Dr. Mathews[2] referring to the difficulty, or, rather, impossibility, of effecting a cure by the administration of medicines in severe cases,

advocates either total destruction of the skin affected by the actual cautery, or else its complete removal by dissection.

REFERENCES.—[1] "Clin. Jour.," Jan. 11, 1899; [2] "Treatment," Oct. 27, 1898.

ANUS (Re-construction of Sphincter of).

Herbert Wm. Allingham, F.R.C.S.

Lennander[1] has devised an original and successful operation for the restoration of the anal sphincter in a case in which it had been destroyed by a phlegmonous ulceration which originated in the ischio-rectal spaces and left the patient without the power to retain either flatus or fæces, even when astringents and opiates were employed. The opening into the rectum readily admitted three fingers, and electrical stimulation failed to reveal any contractility of the anal sphincter. Subsequent examination, after a successful operation had been performed, showed a local anæsthesia in the area about the anus and in the mucous lining of the gut, which made it highly probable that the nerves had been destroyed as well as the muscle.

Finding no analogous or similar cases reported in literature, he determined to construct a new sphincter, employing for this purpose the levator ani muscles, which have been shown to have the power of contraction in a manner similar to the anal sphincter. After careful dissections of the male perineum and a study of the possible operations he performed the following, with results that were all that could be desired, as the patient secured perfect control over both flatus and fæces, even when the latter were liquid :—

An incision followed the line of the sacrum and coccyx to the tip of the latter bone, and then took a horseshoe form about the rectum. The posterior portion of the levator ani and the anterior portion of the coccygeus were laid bare by dissecting back the glutei from their median origin. The levator ani muscles were freed from the coccyx and coccygeal muscles, although the separation was not made completely to the margin of the pelvis, as it would have interfered with the innervation of the muscles by dividing the nerves which are found there springing from the sacral plexus. These portions of the levator ani were carried on either side of the rectum, and fixed to the anus in such a manner that their contraction produced a constriction of the rectum. The median portion of both glutei muscles were separated from the tubero-sacral ligament, the sacral bone, and the coccyx, and used to fill the defect in the pelvic floor caused by the displacement of the levator ani muscles, and with the skin of the anus. The after-

treatment consisted in electrical stimulation and the use of small enemata to accustom the rectum to retain its contents.

REFERENCE.—[1] "Cent. f. Chir.," June 24, 1899.

APHASIA. *Græme M. Hammond, M.D., New York.*

Pershing [1] reports a case of Wernicke's conduction aphasia, supported by an autopsy. The patient, after a sudden attack of unconsciousness, was somewhat word deaf and absolutely paraphasic. Though he could articulate words, they followed each other without logical sequence; in other words, he talked jargon. At the expiration of two months he died. An area of softening was found situated immediately above the fissure of Sylvius, and 6 cm. posterior to the junction of the vertical and horizontal branches. The softened area was in the shape of an irregular cone, the base being at the cortex. It was 1·8 cm. deep, and 0·8 cm. in diameter at the base. The dorsal half of the right cerebellar hemisphere was also destroyed by softening. Thrombosis of one of the branches of the sylvian artery was observed. The lesion was so situated as to interrupt the conducting path between the higher auditory centre and Broca's centre. The author does not believe this association path is a direct one through the insula, but that it takes a curved course around the posterior extremity of the fissure of Sylvius.

Hammond [2] reports a case of slight word-deafness with anosmia. A surgical operation revealed the lesion which was caused by traumatism. There was a subdural clot over the entire superior temporal convolution, and a rupture of the cerebral tissues at the junction of the middle and posterior thirds of that convolution. The clot was removed. A year later the anosmia had entirely disappeared, while the slight word-deafness still persisted. He referred to Mills's case of anosmia in which the lesion was confined to the inferior temporal convolutions, quite a distance from the lesion in his own case. He concludes that a distinct naming centre does not exist, and that anosmia is merely a symptom of derangement of the higher speech centres.

He also reports a case of absolute word-blindness and word-deafness, in which the lesion observed *post mortem* was found to be an area of softening, limited to the middle third of the second temporal convolution. As the angular gyrus contains the centre for word visual memories, and the superior temporal convolution the centre for word-hearing memories, he brings forward his case as a further demonstration of his opinion, that a lesion in any part of the speech area may cause any of the different forms of sensory aphasia.

REFERENCES.—[1] "Trans. Amer. Neurol. Assoc.," 1900; [2] "Journ. Nerv. and Ment. Dis.," July, 1900.

APPENDICITIS. *Walter G. Spencer, M.S., M.B., F.R.C.S.*

To summarise this much discussed question: An immediate operation is required in all acute cases, and in all doubtful cases where the pulse-rate taken frequently, when the patient is quiet, has definitely risen to 110. Severe subacute cases are very carefully watched until the quiescent stage, when an operation *à froid* should be advised. After a mild attack a second may be awaited, yet if any uneasiness or tenderness remains, it is far better not to delay operating. An operation during the acute stage is not in itself a danger, when the general peritoneal cavity is not opened. Operations during the quiescent period are safe and effectual. The appendix must be completely excised, being shelled out from its peritoneal coat when densely adherent. A hernia is avoided by splitting the muscles, suturing in stages, and recumbency until the scar is firm.

Unfortunately, too late and fatal cases are constantly coming under notice. I may mention some which have occurred recently: septic empyema, hepatic, sub-diaphragmatic, supra-hepatic abscess tending to point in the right hypochondrium, pelvic abscess opening into the intestines or rectum or bladder, septic thrombosis of the iliac and inferior vena cava veins—gangrenous abscess involving all the upper thigh. In two cases a secondary abscess had occurred on the left side, in one by direct extension across the abdominal wall to the left kidney, in another in the left lobe of the liver extending through the diaphragm, setting up a septic empyema and also a pulmonary abscess from which pus had been coughed up. With regard to operating where very slight tenderness remains, I have lately seen three cases where the chief symptom was marked increasing debility: one case, a child of three, had been ailing from the age of ten months, and the appendix was surrounded by dense adhesions: after removal she regained excellent health. The second, a young man, had been getting weaker for three months, when signs of suppuration came on, and a greatly thickened appendix was found in a small thick-walled abscess: he died of cardiac failure. The third, also a young man, came over from America on a voyage to recover his health; he became very ill with no definite signs except fulness and great tenderness on the right side of the upper part of the rectum. A deep-seated abscess was opened, a portion of the cæcum sloughed, forming a fistula, and double parotitis was followed by death. In all three nothing further in the history of the illness could be obtained but indefinite uneasiness or tenderness in the iliac region.

McBurney[1] takes up the following position: "No medical treat

ment of approved value has ever been presented to the profession, and the pathology of this disease renders it extremely unlikely that any such treatment will ever be discovered. In other words, every case of appendicitis is liable, sooner or later, to demand surgical interference for its cure. Nevertheless, the dictum that every case of appendicitis should be operated upon as soon as the diagnosis is made is not to be accepted. In many mild cases operation should be delayed until the acute attack has passed in order that a much safer and better operation may be done in the quiescent period."

Tubby[2] gives a most useful review of the whole subject.

Here one may protest against the retrograde tendency of including as appendicitis, cases of constipation, or fæcal impaction with colic, which are completely relieved by aperients and enemata. Appendicitis is not definitely relieved by such measures.

Caley[3] reports a series of two hundred cases treated consecutively in the wards of St. Mary's Hospital.

Simple.	Chronic and Relapsing.	With Localised Peritonitis.	With Diffuse Peritonitis.		With Special Complications.*	
99	42	29	23		7	
All recovered.			Recoveries	Deaths	Recoveries	Deaths
			3	20	2	5

Treatment { Medical - 99 Deaths - 3
Surgical - 102 Deaths - 22

25 or 12·5 per cent.

The fact that about half recovered under medical treatment points to success in individualising cases. At the same time, it must be added that one-third of them relapsed, and the mortality is to be chiefly attributed to the cases being admitted "too late," after undergoing an expectant treatment outside for a variable period. Caley considers the temperature a fallacious guide unless taken along with the rate of the pulse and respiration. The temperature may be normal or subnormal during the initial collapse of perforative or gangrenous appendicitis, in fully developed septic peritonitis, in a strictly localised abscess, as well as in mild cases. It is the pulse rate which is of marked prognostic value, especially when it is out of proportion to the temperature. The mild cases had a pulse rate of 80 to 100; in all those in which it was persistently above 120, the attack was a severe one.

Allchin, in the discussion at the Medical Society following Lock-

* Special complications: intestinal obstruction, suppurative pylephlebitis, with general pyæmia, hepatic pyæmia, hepatic and sub-phrenic abscess, acute pulmonary œdema and pneumonia.

wood's paper,[4] emphasised the importance of the pulse rate of 110 or above, as from the physician's standpoint indicating the necessity of considering the advisability of an operation. The pulse rate is occasionally below 110 soon after perforation, and exceptionally falls in the later stages of diffuse peritonitis, instead of rising. But in such instances, other signs sufficiently demonstrate the gravity of the case. It is in obscure and doubtful cases where other signs are lacking, or when it is required to distinguish a real improvement from an incomplete yet deceptive remission of symptoms accompanying gangrene, or perforation or abscess, that a pulse rate of 110 or over points urgently to the need of an immediate operation.[5] Even where morphine or opium has rendered the patient placid, the high pulse rate is a true indicator of danger.

Keetley[6] quite rightly insists that the iliac incision should always be adopted in acute cases, in order to keep, if possible, outside the peritoneum. On reaching the transversalis fascia, search should be made for the thickened appendix and abscess, by palpating with the finger to find the greatest amount of resisting induration, which is entered by using two pairs of anatomy forceps (*Fig.* 1). Undoubtedly to open the unaffected general peritoneal cavity in an acute case, as is done when an incision is made in the linea semilunaris, is to induce a grave complication.

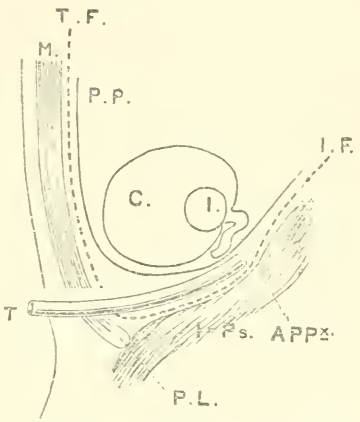

Fig. 1.—Rough Diagram to illustrate the operation. T.F., Transversalis fascia. M., Muscular and aponeurotic layers of abdominal wall. P.P., Parietal peritoneum. C., Cæcum. I., Ilium. I.F., Iliac fascia. APPx., Appendix vermiformis. I.-Ps., Ilio-psoas muscle. P.L., Poupart's ligament. T., Drainage tube.

Means[7] reports one hundred and twelve cases; eighty-two were treated surgically, of which two died, one from pre-existing acute suppurative peritonitis, another from a chronic unknown cause. Of the thirty patients treated medically, eight died from septic peritonitis; of the twenty-two who recovered, twelve had recurrent attacks.

Mansell Moullin[8] strongly supports early operation in acute cases, and especially if in a doubtful case thirty-six hours have passed without definite improvement.

Mynter has saved thirteen acute gangrenous cases, and I have described [9] a case in which the appendix was found gangrenous and just on perforating, twenty-six hours after the first commencement of any symptom.

That a few cases have recovered after diffuse purulent peritonitis has been well established. When there is but a small amount of sticky pus with well marked congestion of the peritoneal coat of the intestines, no hope can be entertained. If there is a large amount of thick pus without adhesions, and no marked intestinal congestion or tympanites, then after the most thorough flushing and the insertion of several drains, recovery is possible (Tixier [10]).

REFERENCES.—[1] "Internat. Text Book of Surgery," vol. ii., ch. 13; [2] "Appendicitis Med. Monograph Series," No. iii.; [3] "Lancet," 1900, i., 378; [4] "Brit. Med. Jour.," 1900, vol. i., p. 196; [5] "Lancet," 1899, i., 552; [6] Ibid., 1900, i., 87; [7] "Jour. of Amer. Med. Assoc.," 1899, Aug. 5; [8] "Lancet," 1899, vol. ii.; [9] "Clin. Soc. Trans.," 1899, vol. xxxiv., p. 307; [10] Brit. Med. Jour.," 1899, vol. ii., Epit. Dec. 30.

APPENDICITIS AND LABOUR. (See "Pregnancy.")

ARSENICAL ERUPTION. *T. Colcott Fox, M.B.*

It is important that the practitioner realise the possibilities of eruptions arising from the administration of arsenic. The pigmentation is fairly well known with the speckled appearance and dirty looking neck. Idiosyncrasy, as usual, comes into play, for whilst in many cases the pigmentation only occurs after the prolonged administration of arsenic, in certain cases the effect is rapidly produced. Enriquez and Lereboullet record a case in which the generalised melanoderma was associated with symptoms suggesting Addison's disease.

Another not uncommon change is the gradual production of keratosis of the palms and soles. Several cases, such as one recorded by Hartzell, have been described in which epithelioma supervened. Hartzell mentions an observation by Geyer, that in the Prussian town of Reichtenstein, where arsenic mining is an industry, carcinoma of the fingers supervening on arsenical warts is of frequent occurrence.

REFERENCES.—"Gaz. Hebd. de Méd. et de Chir.," July 6, 1899; "Amer. Journ. Med. Sci.," Sept., 1899.

ARTHRITIS. (See also "Rheumatism and Gout.")

J. W. Thomson Walker, M.B., F.R.C.S.

Gonorrhœal Arthritis.—According to Moynihan[1] all gonorrhœal inflammations begin acutely, and the great majority run a very chronic course. A point worthy of note in these joint inflammations is the excessive pain complained of by the patient, which is wholly

out of proportion to the intensity of the local inflammation. The most serious feature, however, is the extraordinary tendency to ankylosis.

Out of twenty-seven reported cases in which the examination was made, the gonococcus was only found in eleven. The author believes that occasionally if the joint is very tense and the pain exceedingly acute, immediate relief may be gained by incision and flushing out the joint with antiseptic fluid, as the French surgeons advise.

Dr. O'Conor[2] is a strong advocate of incision with irrigation and drainage in all cases of this disease, and the results he has reported are a striking contrast to those obtained by less radical measures.

This author performed arthrotomy in ten cases, and in nine the joints opened were restored to their normal contour and function; the remaining case was still under treatment. In eight cases the knee was affected, and in one of these the disease was symmetrical and the double operation successfully performed, while in another the wrist was affected. In the remaining two cases the ankle and the wrist were affected singly.

C. F. Marshall, M.D., F.R.C.S.

T. Stewart[3] gives the results of observations in forty-eight cases of gonorrhœal arthritis. Forty-two cases were male, averaging about thirty years of age, the remaining six females. No relation with previous rheumatism as a predisposing cause was made out. However, one attack of gonorrhœal rheumatism predisposed to another in case of fresh urethral infection, since nearly one-third of the cases gave a history of previous attacks. The arthritis occurred at all stages of the urethritis, in five cases more than a year after infection. Continuance of urethral inflammation may account for the numerous relapses. Most cases, when admitted early to hospital, did well, but at least half were left with partial ankylosis of some joints. In seven cases the infection was confined to the heels and soles of the feet, without any joints being affected. The knee was affected in twenty-nine cases, the heel or plantar fascia in eighteen cases; then in order of frequency, the ankles, small joints of the feet, elbows, shoulders, wrists and small joints of the hands.

The most common complication was endocarditis (eight cases); iritis occurred in four cases, and conjunctivitis in two.

The results of treatment were, on the whole, unsatisfactory, only nine patients being discharged cured, and these cases entered hospital early in the disease. The average duration of treatment in all cases was thirty-four days. Treatment consisted in rest in bed and low diet. **Hot Air** was used in thirty-six cases, the affected joint being exposed

to dry air at 300° F. for half an hour daily, or every other day. Under this treatment the general condition improved, and the patients gained in weight. In mild and subacute cases there was marked relief of pain for the time. In chronic cases there was also improvement. Massage in some of the chronic cases gave increased mobility. No internal remedy was found to be of much value, salicylates, salol, iodides and alkalies, all being tried.

Frazier,[4] in discussing the treatment of this affection, adopts König's classification into four varieties: (1,) Hydrops; (2,) Sero-fibrinous; (3,) Empyema; (4,) Phlegmon.

In the acute stage, rest and immobilisation constitute the best treatment with, in addition, the ice-bag, hot fomentations or the hot air bath. After the acute stage, absorption of the fluid in the joint should be stimulated by elevation of the limb with firm compression by a rubber bandage. If no improvement occurs in two weeks the joint should be aspirated. If the fluid withdrawn is clear no further treatment is necessary; if not clear, arthrotomy is recommended, and the joint freed from fibrinous flakes. The joint is then again immobilised, and moderate compression applied by a flannel bandage. The use of the limb should be cautiously allowed.

In empyema of the joint, indicative of mixed infection, immediate arthrotomy, irrigation and drainage are indicated. These cases are rare.

In the fourth and most serious form—phlegmon of the joint—immobilisation in plaster should be done, and if the knee or hip is affected, extension applied. If this does not succeed arthrotomy and irrigation are required. In the later stages of all cases, massage and the careful use of active and passive motion, are of great value. The author advises simultaneous treatment of the urethra, but is doubtful if internal drugs are of any value in affecting the course of the disease.

Mackenzie Forbes[5] recommends careful treatment of the urethra in cases of gonorrhœal arthritis, for the following reasons: (1,) If the arthritis is due to the migration of gonococci to the joints, the rational treatment is to cut off the source of supply in the urethra; (2,) If it is due to the migration of other microbes, or if it is caused by the absorption of toxins from the urethra, we may assume that all exacerbations are due either to reinfection of the joint, or to retransference of toxins. Hence the rational treatment of urethral arthritis consists in local treatment of the urethra, combined with general treatment of the arthritis. The urethra should be treated for some time after the joints have recovered. The author's treatment consists in the internal

administrations of a pill containing **Boric Acid** and **Methyl Blue,** or **Urotropin,** combined with irrigation of the urethra with permanganate and injections of protargol.

REFERENCES.—[1] "Lancet," Nov. 18, 1899; [2] Ibid., Dec. 9, 1899; [3] "Montreal Med. Journ.," March, 1900; [4] "Therap. Gaz.," Jan., 1900; [5] "Amer. Journ. of Cut. and Gen.-Urin. Dis.," Jan., 1900.

ASCARIDES. (See "Vermes.")

ASCITES (Surgical Treatment of).

Walter G. Spencer, M.S., M.B., F.R.C.S.

In the "Medical Annual," 1897, p. 127, the operation carried out by Morison on his and Drummond's case is described. The ascites was cured but a ventral hernia remained. Morison[1] completes the account of this case which had died two years later following an operation for the cure of the ventral hernia. The liver, spleen, and intestines were attached to the abdominal wall by numerous band-like adhesions, as was also the omentum. All these adhesions were shown by injection to have become vascularised, some of the vessels being fully the size of the radial artery, and the sub-peritoneal plexus of vessels formed a dense network. The liver was a typical specimen of cirrhosis with much fatty degeneration and well formed fibrous tissue. Morison recommends the operation in uncomplicated cirrhosis. After one or two tappings have been followed by a quick return of the ascites, the omentum should be fixed in an incision above the umbilicus to avoid a ventral hernia becoming troublesome.

Talma, who was the first to operate upon the Continent, has carried on the operation in three cases. In his third case[2] the cirrhosis of the liver in a boy aged nine was relieved by suturing the omentum, gall bladder, and later on the much enlarged spleen between the peritoneum and the skin. As a result there was marked shrinkage of the enlarged liver and spleen with dilatation of the superficial veins.

Turner, in a case under Rolleston,[3] made an incision just below and parallel to the right costal margin, and found the liver markedly hob-nail with much clear ascitic fluid. The surface of the liver and diaphragm was scraped with the finger, sponge and director, and the omentum was then fixed to the peritoneum and between the liver and diaphragm. In a second case the procedure was similar, except that the edge of the liver was fixed in the abdominal wall. In the first case there was marked improvement. The second was not so successful, some œdema remaining in the legs, also an enlarged spleen which was, however, diminishing. In the course of the discussion Bidwell mentioned two unsuccessful cases of fixing the liver in the abdominal wall.

I operated recently on a case of Murrell's.[4] The patient, a girl, aged nineteen, was suffering from an obscure form of anæmia with ascites, albuminuria, and a cardiac murmur, but with an outwardly normal liver. Under medical observation and treatment she did not improve, and after three months it was necessary to drain the peritoneal cavity. A week later the tube was omitted and the fluid re-collected The spleen was enlarged to two inches below the ribs, not so the liver which felt soft ; she continued to pass large quantities of albumen and was getting weak. I thereupon fixed the omentum between the skin and peritoneum in a short epigastric wound with kangaroo tendon. The wound healed well, the patient improved in health, lost her albuminuria and the cardiac murmur became faint. She left the hospital convalescent, with some enlarged superficial epigastric veins, about two months after the operation. Three-and-a-half months afterwards she was reported to be in good health.

REFERENCES.—[1] "Lancet," 1899, i, 1426 ; [2] "Cent. f. Chir.," 1898 ; [3] "Lancet," 1899, i, Dec. 16 ; [4] Ibid., 1900, i, 1725.

ASTHMA. *Prof. H. P. Loomis, M.D., New York.*

The term asthma has been somewhat loosely applied to several different pathological conditions and group of symptoms, the exact nature of which it is important to consider in order to employ a rational treatment. The term is often wrongly used by patients and others to express the dyspnœa which accompanies emphysema and chronic bronchitis. Such dyspnœa is due to pathological changes in the lungs and is to be distinguished from cardiac asthma which is dependent on the condition of the lungs, or from renal asthma which is to be explained either by the effect of the poison on the disordered circulation or the respiratory centre in the course of disease of the kidneys ; and from pressure dyspnœa dependent on the pressure of an aneurysm, or new growth in the trachea.

Dr. Sydney Martin[1] says it is necessary to treat an asthmatic attack with sedatives—the patient demands it and the condition requires it. In uncomplicated asthma, hypodermic injections of **Morphine,** $\frac{1}{6}$ to $\frac{1}{4}$ of a grain, an administration of **Chloral,** or the inhalation of **Chloroform** will cut short the attack. The use of morphine or chloral should be limited to the attack, is not to be continued for too long a period, and must be in the hands of a practitioner and not in those of the patient. He refers to the inhalation fumes of burning nitre paper or specially prepared powders as a popular remedy for attacks of asthma, they in many cases giving temporary relief, sometimes even permanent relief. The prepared powders consist chiefly of stramonium and nitre. He says that the

ones used at the Brompton hospital contain 1 part each of anise and nitre, 2 parts of stramonium leaves, and 5 grains of tobacco to the ounce; one teaspoonful is to be burned on a plate and the fumes inhaled. The cigarettes used are a manufactured article containing stramonium leaves, nitre, tobacco; they relieve the attack. A pill containing $\frac{1}{4}$ of a grain of morphine with $\frac{1}{60}$ of a grain of atropine sulphate, given at bedtime, is sometimes useful. Extract of stramonium, $\frac{1}{4}$ grain, may be substituted for the atropine. He says he has not found the tincture of lobelia very useful. Of remedies which may be administered to patients with frequently recurring attacks, he advises **Iodide of Potassium** and **Arsenic.** The iodide may be most conveniently given with stramonium as in the mixture of the Hospital Pharmacopœia, which consists of $\frac{1}{4}$ grain of the extract of stramonium, 2 grains of extract of licorice, 3 grains of iodide of potassium and 5 minims of chloric ether. If the iodide is given alone it should be administered in 5-grain doses two or three times daily, the medicine being stopped from time to time. If patients can take the stramonium with the iodide they do better than if the iodide is given alone.

The regulation of the diet of asthmatic patients is of great importance. Meals should consist of digestible food, and that in moderate quantity, no heavy or late meals being allowed. Remedies, such as alkalies, after meals, given with a view to correcting the digestion, combined with a proper diet, give great relief in cases of peptic asthma. Although the asthmatic patient ought to be careful with regard to food it is wrong treatment to starve himself, as the best chance for recovery is by an improvement of the general health, and the food should, therefore, be sufficient and nourishing. It is for this reason, doubtless, that cod-liver oil does so much good in some cases when every remedy seems to have failed.

Dr. Rixa[2] says that about two weeks before the onset of the disease he begins to irrigate or sterilise the nasal cavity and the post-nasal spaces with a harmless antiseptic solution, using a douche or atomiser. After giving a great number of antiseptics a thoroughly fair trial, he decided upon **Hydrozone** as the most innocuous and the most powerful germicide. Using this at the beginning for irrigation, diluted in the proportion of 1 oz. of hydrozone to 12 ozs. of sterilised water and increasing the dose when nearing the period of expected onset according to the severity of the disease, using a douche frequently and regularly and thus keeping the nares perfectly septic during the entire period, he has been able to prevent the outbreak of the trouble. In the most obstinate cases where there is still some

irritation in the nasal cavity he gives the full prescription as an aid :—

℞ Boric Acid	grs. xx	Glyco-thymolin		℥ij
Menthol	grs. iv	Sol. Eucain β, 4%,	q.s. ad	℥ij

Sig.—Use in atomiser.

As a rule this treatment is sufficient to avert the disease and keep the patient in perfect comfort.

Hay Fever.—Muller,[3] of Vienna, treats chronic hay fever by the use of the following formula :—

℞ Menthol	3 grms. (grs. 45)	Alcohol	14 grms. (ozs. 4)
Resorcin	3 grms. (grs. 45)		

Dose.—2 drachms, diluted with water, every four hours.

His patients came from the United States and England. They were all more or less neuropathic, and were subject to gastro-intestinal troubles. As he always believed that there was a close relationship between gastro-intestinal disturbances and hay fever he at once treated the cases by administering alkaline mineral water, using massage and other well known forms of treatment along that line. In addition, he applied a solution (10 grains to the ounce) of silver nitrate to the nasal cavities by means of a brush, and irrigated with seven or eight litres of water, after which he applied the above solution.

Dyspeptic Asthma.—Landi[4] publishes a clinical lecture on attacks of asthma due to dyspepsia. The most typical cases occur in children usually of neurotic inheritance. To suppose that they are due to auto-intoxication is the most easy assumption, for the ptomaines and toxins, hitherto isolated for the most part, act upon the heart. He says probably there is an increased bulbar receptivity in these cases, and reflexes are more easily excited than usual. Acetonuria is not infrequently present. Strong evidence of the dyspeptic nature of the attacks is afforded by the cases in which the exhibition of purgatives or emetics gives prompt and immediate relief. Moreover, there are generally signs of dyspepsia—for example, furred tongue, foul breath, nausea and vomiting. Treatment should be directed accordingly.

Goldschmidt[5] divides the treatment of asthma into (1,) Purely medicinal ; (2.) Physical ; (3,) Inhalation treatment. He attaches great value to the use of morphine, and where not well borne, then chloral. In cases of prolonged asthma with expectoration, iodides combined with expectorants and opium he finds useful, also amyl hydrate, occasionally antipyrine, quinine and stramonium fumigation. Expectoration must be encouraged, and he thinks the iodides are of

most service. They may be given over long periods of time, but in cases where expectoration is abundant they are not only useless but harmful. Dr. Goldschmidt believes **Compressed Air** to be of use in an acute attack; it would benefit some of the sequelæ of the disease. He thinks inhalations are far too little appreciated, but irritating ones, which produce cough, must be avoided. He also attaches value to the hydro-therapeutic treatment in some cases, even when catarrhal symptoms are present; the body may be vigorously sponged with water at 18° C.; warm drinks should be given at the same time. Vapour baths may be of great value and should be limited to two a week.

REFERENCES.—[1] "Brit. Med. Jour.," Dec. 24, 1899; [2] "Jour. Amer. Med. Assoc.," Jan. 21, 1899; [3] "Pract.," Aug., 1899; [4] "Brit. Med. Jour.," Nov. 11, 1899; [5] Ibid., Jan. 7, 1899.

ATROPHIC RHINITIS. (See "Rhinitis.")

BACTERIURIA. (See "Urine.")

BERI-BERI. *James Cantlie, M.B., F.R.C.S.*

Dr. Francis Clark,[1] of Hong Kong, draws attention to an outbreak of beri-beri in children. In a blind asylum in Hong Kong a child was admitted suffering from beri-beri in July, 1899, and a few cases developed in the asylum. The children of the asylum attended divine worship at a neighbouring foundling home, where a large number of Chinese children lived. Infection seems to have spread to the foundling home, for up to December 7th, sixty-nine out of one hundred and two children dwelling in the home suffered from beri-beri. The children attacked were all between the ages of four and seven years.

The infectious nature of beri-beri is still an undetermined quantity, but in this instance there seems some justification for the belief. In addition to the bringing together of the two groups of children it appears that the two establishments have a nurse in common; and that two children in the home who were being attended by the nurse were the first to be attacked by beri-beri. It is unlikely, however, that they were the means of spreading the disease to others, as within two days after the two children mentioned were afflicted, more than half the children in the home were also suffering from the disease. Dr. Clark remarks that there was no question of meagre diet, that the rooms in the home were freely ventilated, dry, well lit, and the floors closely boarded. Insanitary environment seems absent in this outbreak; but one peculiar feature, namely, that all the children attacked slept on the ground floor, is a confirmation of an observation often made before.

We are yet in the dark concerning the etiology of beri-beri. Experimental and clinical evidence go to show that diet plays an important part in the etiology. In the Japanese navy an improved dietary and better sanitary conditions abolished the disease. The addition of fat to the ordinary "coolie" diet arrested an epidemic at Chantabun in Siam; and the withdrawal of fat in a French penal settlement in Cochin-China led to an outbreak of beri-beri which was allayed by fat being again added to the prisoners' food.

Dr. A. van der Scheer[2] states it as his belief: (1,) That beri-beri is not due to the influence of any exogenous toxin emanating from the soil; (2,) That the toxin is not dependent upon food; (3,) That beri-beri is not contagious; and (4,) That the disease is not of a miasmatic nature. Dr. van der Scheer is of opinion that beri-beri must be caused by a parasite that lives in the intestinal tube, and forms a toxin which causes degeneration of nerves. The *blatta orientalis* appears to Dr. Scheer to be the insect in which the beri-beri parasite resides during its extra-corporeal life-cycle, and it is to the presence of the infected blattæ that this writer attributes outbreaks of beri-beri.

Dr. J. S. F. Fowler[3] discusses the question, "Does beri-beri exist undiagnosed in British Guiana?" Dr. Fowler describes a number of cases of multiple neuritis occurring in his practice which presented many of the features of beri-beri. Both paraplegic and dropsical cases were met with, and in many ways the question asked by Dr. Fowler would seem to require a positive answer. Against the conclusion, however, that the disease in British Guiana is beri-beri are: that sudden cardiac failure is very rare, that sudden deaths are unknown, and that recovery is rapid. Dr. Fowler remarks that a good **Purge, Thymol, Iron,** a **Suitable Diet, Rest** and **Diuretics** bring about a rapid cure in the cases he treated.

In "Notes on Beri-Beri in the Australian Pearling Fleet," Mr. T. H. Haynes[4] gives his experiences of beri-beri at sea. His observations go to show that it is only after a prolonged stay on board ship —not less than seven months—that beri-beri appears at sea; and that the substitution of a mixed diet of wheat flour, beans, potatoes, etc., to the exclusion of rice, mitigates, even if it does not prevent, the disease.

Dr. Max F. Simon[5] (Singapore), in a paper entitled "*The Known and the Unknown in respect of Beri-Beri*," discusses our present state of knowledge as regards beri-beri. He points out that there is only one constant condition present in all recorded outbreaks, namely, that persons are dwelling together in considerable numbers. Dr. Simon does not consider that this should always imply over-crowding. No other factor either in diet, treatment, modes of infection, or pathology

in connection with beri-beri has as yet been established as a constant condition in this disease.

Mr. P. T. Carpenter,[4] from an extensive experience of beri-beri in British North Borneo, comes to the conclusion "that there is something, a germ of some sort probably, in the exhalations of the soil of districts where beri-beri is endemic that may actually, *per se*, cause the disease in subjects predisposed." Mr. Carpenter states that it is the poor man, the ill-housed, the poorly fed, and oftentimes the over-worked coolie, who is the victim of beri-beri. In countries also where beri-beri is endemic inactivity from any cause, especially confinement to bed, is a pre-disposing cause of beri-beri. Patients in hospital with open sores and after amputations are especially liable to contract the disease. Mr. Carpenter remarks that many diseases have been mistaken for beri-beri, such as alcoholic neuritis, sub-acute anterior poliomyelitis, ankylostomiasis, scurvy, and even sleeping sickness. In regard to treatment there are four principal agents which, according to Mr. Carpenter, have a curative effect: (1,) **Strychnine** by mouth or hypodermically: (2,) The application of either the **Faradic** or **Galvanic Currents** to the affected muscles: (3,) A generous nitrogenous diet combined with a sufficiency of fresh vegetables; (4,) Removal of the patient from the endemic area.

REFERENCES.—[1] "Brit. Med. Jour." May 12, 1900; [2] "Jour. Trop. Med." Nov. 1900; [3] Ibid., May 1900; [4] Ibid., March 1900; [5] Ibid., Sept. 1899; [6] Ibid., Aug. 1899.

BLADDER (Diseases of). *F. Hurry Fenwick, F.R.C.S.*

Stone in the bladder.—Mr. Reginald Harrison[1] gives an interesting account of one hundred and ten cases of operation for stone performed between 1890 and 1897. The operations were: litholapaxy, one hundred and one: perineal lithotrity, three; suprapubic lithotomy, three; and median lithotomy, four.

Death followed the operation of litholapaxy in six cases, and was due to the following causes: suppurative nephritis, four cases; pelvic cellulitis, probably from a vesical pouch, one case; senile decay, one case.

In regard to the cases of suppurative nephritis, the first was a man of sixty-five years, on whom a similar operation had been successfully performed thirteen months before, and the second operation was probably too long delayed; the second, a man aged sixty years, died on the twenty-eighth day of chronic suppurative nephritis and syncope. In the remaining two cases there was urethral stricture of long standing, and in one of these the author believes that perineal lithotomy and bladder drainage would have given a better result.

Besides these two fatal cases, stricture of the urethra was a complication in six other patients. In itself stricture is no obstacle to litholapaxy, but when it is of such tightness and duration that suppurative nephritis is imminent or actually present, this operation will be practised under grave risks, and perineal lithotrity, with division of the stricture and subsequent drainage, is far safer.

In the one hundred and one cases of litholapaxy, recurrence of the stone necessitated further interference in twenty-three. In these cases the operation was repeated once in thirteen, twice in two, thrice in one, four times in one, five times in one, six times in one, nine times in two, and ten times in two. Many of these secondary operations were slight, and as they were mostly performed in old men with atonic bladders, and the intervening health was good, a cutting operation was not to be recommended. Recurrence of stone after crushing is only of importance in cases of enlarged prostate and the associated bladder conditions. In the child or young adult it is very rare, and only once in this series did it occur, and then was probably a fresh stone from the kidney. All the remaining cases of recurrence were associated with this form of urinary obstruction. The explanation is simple, for complete emptying of the bladder becomes impossible, and stones descending from the kidney are retained, and in the same way other foreign bodies, such as shreds and sloughs from an inflamed bladder, may form nuclei for the formation of stones, while on more than one occasion the author has found a recurring calculus take origin on the cicatrix of a suprapubic cystotomy wound, or the remains of silk sutures used in this operation.

Incomplete removal of *débris* aftercrushing does not lead to recurrence so often as some would consider. In cases of enlarged prostate, however, the sacs and pouches in the bladder wall are inaccessible hiding places for such *débris*. To prevent recurrence of the stones, the author attaches much importance to the thorough clearance of the bladder in the first instance, to the subsequent management of the case, and to measures which aim at causing shrinking or atrophy of the enlarged gland.

Mr. Harrison insists upon the importance of washing out the bladder once a week with the metal catheter and aspirator for three or four months after the operation, in cases of enlarged prostate and atonic bladders. Silver nitrate has a very beneficial effect on these cases of prostatic hypertrophy with chronic cystitis when there is a tendency to the formation of phosphatic concretions.

Vasectomy, with a view to causing atrophy of the enlarged gland was performed in six cases, and seemed beneficial in facilitating the

passage of instruments and allowing freer micturition, and thus getting rid of the slimy mucus. In none of these cases has recurrence of the stone taken place.

The other operations performed were not preferred on account of the stone, but for some complication present. Thus perineal lithotrity was performed in three cases on account of an extremely contracted and thickened bladder, a rigid fibrous prostate and a frequently operated urethral stricture respectively.

Suprapubic cystotomy was performed twice, and in both cases the operation was in the main an exploratory one. Mr. Harrison is not much in favour of this method of removing large calculi from elderly males.

Median perineal lithotrity with bladder drainage was practised in four cases on account of chronic cystitis, and with very satisfactory results.

Encysted Calculus.—Mr. Bruce Clarke,[2] in an account of twenty-seven cases of encysted vesical calculus, remarks upon the absence of the ordinary symptoms of stone in these cases. It is difficult to find any one symptom which is of much diagnostic value. Cystitis had been present in all for varying periods, but in most cases this was attributed to enlargement of the prostate, which was present in sixteen out of twenty-one cases.

Undue tenderness of the prostate on rectal examination and rectal tenesmus were marked symptoms in some. Several of the cases suffered from stricture and diagnosis was rendered more difficult by the fact that under bladder irrigation the urine for the time being returned to normal.

Some of the stones illustrated the difficulty which is often experienced in sounding where the calculus is thickly coated with mucus.

Of the fifteen cases where the patient's condition allowed of operation, eleven recovered and four died. In regard to the sacs in which the stones lay, some of them were apparently dependent upon the calculus, which had enlarged some depression in the bladder wall, while others were probably quite independent formations. Where the saccule has a narrow orifice, pus is likely to collect in its interior, and as most of these are near the base of the bladder, they should be drained by the perinæum.

The Treatment of Large Encysted Stone.—Mr. Hurry Fenwick writes on the value of a blunt chisel and a mallet in cutting up large encysted stone in the bladder: Among the last hundred cases of stone in the bladder upon which he has operated, there were four which proved to be true encysted calculi. All these were of fair size, 7 oz.

to 2½ oz. From a careful consideration of these and of others which have been under his care, it would seem that the following statements are sufficiently accurate to be accepted:—

(1,) The stone lies in a sac which is situated outside the muscle layer of the posterior wall and most often in the lower third of the bladder. The sac communicates with that viscus by a very narrow orifice.

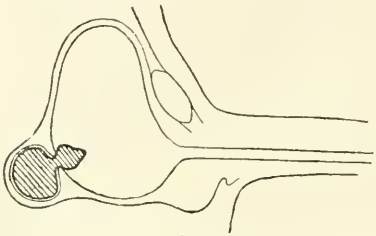

Fig. 2.—Dumb-bell encysted stone from a patient (C.D. æt. 44 Fenwick).

(2,) The stone entirely fills the sac, and is always slightly adherent in parts to the mucous membrane lining it.

(3,) It may project into the bladder forming a dumb-bell calculus (*Fig.* 2), or it may grow flush with the orifice (*Fig.* 3).

(4,) The greater part of the stone is composed of friable phosphatic material.

(5,) A true encysted stone can always be diagnosed without the aid of a calculus sound, for it can always be felt by the finger introduced into the rectum as a smooth, rounded stony mass, covered by the thin wall of the gut.

(6,) The symptoms are perineal or penile pain with evidence of phosphatic cystitis.

Surgery should aim at an accurate diagnosis prior to operation, for litholapaxy is obviously useless, and surgery must aim at the complete removal of the stone from the sac without much laceration of the narrow orifice.

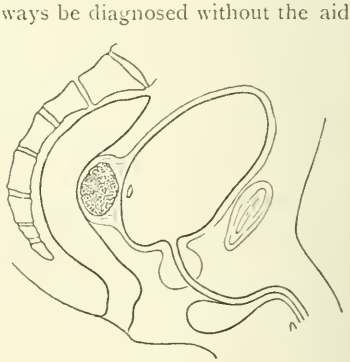

Fig. 3.—An encysted stone not projecting into bladder base (Fenwick).

The first point is easily effected. No one can fail to diagnose a true encysted stone on rectal examination, for the finger easily detects a sharply defined, smooth, stony, hard mass in the bladder back above the prostate. The thinness of the rectal wall covering the stone is often startling.

The next point is the removal of the stone from the sac without destruction to the bladder wall. Few surgeons realise the damage that is done in tearing at the narrow orifice of the sac containing a large encysted stone. The muscle layers are split right and left under the peritoneal coat. They become frayed with the sharp edges of the stone, ingrained with stinking phosphatic grit. They subsequently inflame and slough, leading to sub-peritoneal inflammation as well as obstinate, stinking cysto-pyelitis.

The true surgery consists in performing suprapubic cystotomy at once—a lithotrite is useless. The finger is first passed into the bladder. If there is a projecting nose it must be snapped off and removed—if no dumb-bell exists then the tiny aperture must be located—slightly dilated by the point of the forefinger, and if possible the stone must be freed in its sac. A caisson or speculum should then be passed on to the aperture (*Fig.* 4), a beam of light thrown along the channel to expose the white surface of the stone, a blunt graving tool or chisel being guided on to it under control of the eye. The assistant now passes his finger into the rectum and supports the stone from behind, while the surgeon steadies the point of the chisel on the stone, and taps its head smartly with the mallet. The stone is fractured, as it is chiefly phosphatic material. With a little manipulation the stone is turned, another section is made, and so on, until the pieces can be safely pulled through the orifice of the sac into the caisson and out. The sac is now cleansed, and a drain is placed in it and brought through the suprapubic wound. The bladder is next cleansed and drained. The patient ought to be passing water by the end of the fortnight, and

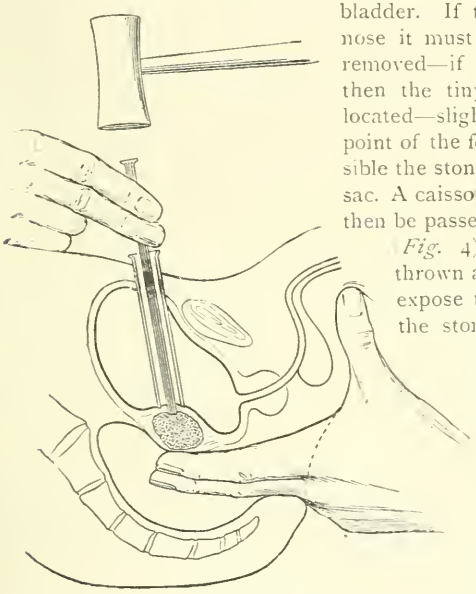

Fig. 4.—Manner of using chisel and mallet with caisson in encysted stone (Fenwick).

healed by the twenty-first day. Mr. Fenwick's earliest case was published in 1890; his last case is described as follows:—

"A gentleman who had been troubled for five years with symptoms of chronic cystitis, and had been sounded by various London surgeons, consulted me in March, 1900. On examining per rectum, I detected high up on the right postero-lateral wall, an encysted calculus of large size (*Fig.* 3). Before proceeding to suprapubic cystotomy, I examined with the cystoscope. I could see no trace of the orifice of the diverticulum; evidently the stone was not a dumb-bell. I noticed, however, that the mucous membrane was succulent and œdematous over the site of the diverticulum, and that its appearance and colour was precisely like that of a prolapsed anus—the rest of the bladder was markedly healthy. On suprapubic cystotomy I could feel neither stone nor hole. It was not until my colleage, who assisted me, had thrust up the calculus by means of his fingers in the rectum, that I discovered a threepenny-piece-sized opening. The tip of my forefinger introduced into the mouth of this, touched the surface of a smooth phosphatic stone. I ran a caisson on to it, and threw a light upon the surface. A dead white surface appeared, surrounded by a rim of swollen, reddened, mucous membrane. I now placed a blunt chisel on it, and cut it into sections (*Fig.* 4) and extracted it piecemeal, without much damage or tearing of the orifice. It weighed 2½ ozs., and was composed of phosphates on an uric acid nucleus. A drain was laid in the bladder and one in the sac; the patient was healed soundly at the end of the third week, and has so far continued free of all symptoms of stone, although slight cystitis still exists.

Anæsthesia in Lithotrity.—Du Chastelet[3] draws attention to the possibility of performing lithotrity painlessly under the anæsthetic effect of **Antipyrine** injected into the rectum or bladder. Guyon used the following as a rectal injection and performed lithotrity of thirty minutes' duration under its influence: Antipyrine, 24 grains; laudanum, 10 drops; water, 3 ounces.

Treatment of Tuberculosis of the Bladder.—Horwitz[4] has found **Guaiacol** (3 minims increased to 20 minims) and **Creasote** are the best anti-tuberculous remedies, while salol, resorcin, boric acid, salicylic acid and methylene blue are the most successful antiseptics, and are indicated when much pus is present in the urine. Vesical irrigation has little effect unless the urine contain large quantities of pus, in which case the following may be useful: normal saline solution, boric acid saturated solution, or a weak solution of salicylic acid introduced by hydrostatic pressure.

Jamin[5] uses **Iodoform** suspended in liquid vaseline ; 1 to 2 drachms of a 5 per cent. solution is injected daily. Very marked improvement was seen in some of the cases treated, a result with which Guiard is able to agree.

Hydraulic distension of the bladder in cases of vesical tuberculosis was introduced by Dr. H. Young[6] in 1898, and has not yet received an extensive trial. Mr. W. H. Battle[7] obtained very marked improvement in an undoubted case of tubercle, involving the bladder and the epididymis on both sides. A column of water, four feet high, was sufficient to distend the bladder with 4 ounces of water. This was repeated daily, on the first occasion under an anæsthetic, but subsequently without any. Nocturnal frequence diminished from seven or eight times to twice, and diurnal from twelve to four times.

In cases of exstrophy of the bladder, the operation of uretero-intestinal anastomosis has recently been attended with some success. According to Nové-Josseraud,[8] the danger of pyelo-nephritis has been greatly diminished by Maydl's suggestion of implanting the whole vesical trigone in the intestine, and thus retaining the sphincter action of the ureteric orifice. Several cases followed from six to fifteen months, had developed no renal disease, and could retain the urine on an average for three to four hours ; and some even for six or seven hours. No disturbance of the intestinal function was observed in any of the cases.

Mazel[9] states that in the last six years, fourteen cases have been operated on by this method, with 85·7 per cent. of cures. Operation should be performed early.

Rutkowski[10] has devised a method of repair of the bladder defect by the use of a piece of ileum resected for the purpose, and reports a moderately successful case.

Operations for Growth in the Bladder.—Total resection of the bladder has now been performed on twelve cases, with a mortality of 50 per cent. Modlinski[11] believes that the operation is indicated in the following conditions : (1,) Recurrence of tumours after operation : (2,) As a primary operation in malignant growths confined to the bladder, and especially those situated near the ureteric orifices ; (3,) In cases of malignant disease spreading from the uterus, the removal of both organs is indicated.

In the male the sacral route is the best ; in the female the suprapubic operation is preferable. The ureters may be implanted into the rectum as Winiwarter[12] recommends, or a reservoir made of the lower part of the rectum, after diverting the fæces, by fixing its severed upper end in the wound.

Motz[13] found that after the ordinary operation for tumours of the bladder, at the Necker Hospital, seven cases out of nine of papilloma survived after three years, and there were four recurrences, while of eighteen cases of epithelioma, only one survived this time limit.

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BRAIN (Surgery of). *Robert Abbe, A.B., M.D., New York.* *W. Scott Schley, A.B., M.D, New York.*

In the last number of the "Annual," Mr. Platt has very well drawn attention to the necessity for great care in the observation and treatment of *all* injuries to the head. It is in these cases, just as with abdominal injuries, that occasionally the seemingly less severe accidents result in damage. There is noticed an increasing tendency to follow these cases for greater periods of time.

Kocher[1] believes that epilepsy, as a result of injury, is found more frequently after the lesser degrees of traumatism than after the severer forms. He has noted but *one case* of epilepsy following eighteen complicated, depressed and extensive skull fractures. Gangolphe and Pieney[2] have called renewed attention to the liability of the *lateral sinuses* to injury, and have reviewed the literature of the subject. They believe that this accident is due to either fracture of the bone or entrance of a foreign body. The resultant effusion of blood may be between dura and bone or into the arachnoid, and obscure the diagnosis between such a condition and a true brain apoplexy. They consider that "when brain symptoms arise after a severe injury of the skull in the region of the sinuses, an exploratory trephining should be practised." Luis had such a case and checked the hæmorrhage by tamponade.

There is also increasingly manifest a recognition of the necessity for greater care in asepsis in dealing with cranial wounds, particularly in those of traumatic origin, fractures of the base of the skull also requiring scrupulous cleansing of the ears, nose and pharynx, repeated irrigations or spray of saturated boric acid solutions and insufflation of boracic acid or iodoform with light closure by gauze. Several cases have occurred during the past year illustrative of this necessity.

Chipault and de la Tourette[3] have recently practised percussion of the cranium to aid in the diagnosis of fractures and to ascertain the

thickness of the bone previous to operative work. The finger or a special mallet is used. The former is preferred, as it conveys the sense of elasticity and resistance.

A number of cases of gunshot wound of the brain, with the subsequent localisation of the bullet by X-ray, have been reported. Barker's [4] case is unusual, the brain having been wounded through the mouth. The bullet was located sometime afterward lying upon the corpus callosum and removed. Bampton's [5] case is of interest from the late formation of abscess. Immediate operation failed to locate the ball. Convalescence was good, but the patient ran a subnormal temperature and pulse and solid food caused headache and vomiting—eight months following the accident convulsions began. At the operation Horsley found an abscess containing the bullet in front of the left motor area. A hernia of the brain followed and was reduced by pressure and "slicing off" a portion. After all the brain damage only *temporary* facial palsy resulted. A typical case of the brilliant results of surgical interference in traumatic hemiplegia is one of Gimlett's.[6] His patient suffered from a depressed fracture of the skull after which complete motor paralysis of the left arm and leg immediately resulted. Seventeen days after trephining and elevation and removal of bone fragments the patient was walking about, and one month later resumed work as labourer. As in previous years it has been in the *traumatic surgery* of the brain that the most brilliant results have appeared.

Widal and Merklen [7] have reported a case of meningeal hæmorrhage in which they have noted a new sign, that of König, a peculiar contracture of the flexor muscles of the thighs when the patient is sitting up, preventing extension of the legs. Heretofore this had been observed in a large proportion of cases of meningitis (80 to 90 per cent.).

In the operative work of the past year the Gigli wire saw has become more popular for exposing areas of the brain, greater use having demonstrated its utility. Wilcox [8] reports a case of craniotomy done subcutaneously with it. After making very small trephine openings the saw was passed from one to the other and a quadrilateral plate of bone, bevelled to prevent its depression, was easily cut. Sawing was arrested before the bridge of scalp was reached. He did not find it necessary to greatly separate the dural attachments or to make large scalp wounds or trephine openings. The case was one of backward mental development in a child with thick skull cap.

Coelhe [9] has reported a case of extirpation of the Gasserian ganglion after the Hartley Krause method, an operation that is growing in

favour for the *chronic persistent* neuralgias of the fifth nerve. He believes in the necessity for a very complete extirpation of the ganglion. "The operation," he says, "should consist in tearing away the trigeminal at the protuberance, as a means of avoiding recurrence; since thus it is certain that the entire ganglion is removed, whilst the same certainty does not exist when the isolated extirpation of the ganglion is attempted." This certainly seems an unnecessary prolongation of the operation and addition to the shock. A section of the nerve branches with evulsion of the distal ends and the interposition of a small piece of rubber tissue (Abbe's method) shortens the operation, reduces shock, and effectually provides against reunion and recurrence.

There have been many successful cases of tetanus treated by the intra-cerebral injection of **Antitoxin** reported the past year.[10] This procedure, which must be undertaken at the earliest possible moment, in *conjunction* with subcutaneous injections of large amounts, is now the accepted method of treatment. The newer method of operating makes but a small drill or trephine opening on either side of the skull through which the needle of the hypodermic syringe is introduced. Cocaine anæsthesia of the scalp at the point of introducing the drill is ample. Bone, dura and brain are insensible.

Mr. Horsley [11] has recently reported a method of dealing with the exostoses of the cranial bones, particularly those of ivory-like density occurring near the orbit. He removes the tumour by "cutting through the normal bone immediately round the growth," and so avoids going through the very hard tissue.

Kocher [12] has recently adopted in his operative work for the cure of epilepsy a new method of dealing with the skull and dura. After trephining and elevation or removal of the bone, the dura is slit by two cuts at right angles to one another and the resulting corners cut away. This is done to prevent bony regeneration and the consequent filling in of the skull defect which takes place when the dura is not incised or excised. The essential feature of the operation is the formation of an elastic diaphragm which will automatically regulate excesses of intra-cerebral pressure. For the drainage of cysts and of the ventricles, which Kocher [13] thinks should be continued for one or more years, a fine silver tube is used, made fast in the skull opening and protected by a small dressing. Heaton [14] has employed electrical stimulation of the motor area of the cortex during an operation for the relief of clonic convulsions with aphasia. He suggests the more extended use of this measure for locating the exact part of the brain area exposed under the trephine opening. He has recorded some

observations, among them, that "stimulation of that part of the ascending frontal convolution on a level with the lower limit of the fissure of Rolando" caused movements of the angle of the mouth *on the same side*. Stimulation of the parietal convolution immediately behind caused similar movements upon the opposite side.

Rolleston and Allingham [15] have reported a case of cerebro-spinal meningitis treated by laminectomy and drainage, with the recovery of the patient. The operation was done as a last resort. The laminæ of the seventh and eighth dorsal vertebræ were removed, a tense dura incised, and drainage tube inserted (subsequently removed on the fortieth day). There was an immediate improvement, which later was temporarily checked by cessation of drainage from premature closure of the wound. They do not plead for the operation as a routine measure, or expect indeed that it will ever be necessary in any large number of cases.

Friedlander and Schlesinger [16] report a case of brain syphilis in which a gumma was removed from the lower part of the central gyri. The case was of interest because an almost isolated paralysis of the tongue was present. The indications for the surgical treatment of gummata are: (1,) Symptoms indicating a tumour of slow development, accessible and small when antisyphilitic treatment has failed; (2,) Progress of symptoms in spite of such treatment when danger to life exists; (3,) Jacksonian epilepsy supervening after treatment even though other symptoms of tumour may have disappeared.

Kocher [17] read before the German Surgical Society (xxviiith Meeting) a most important paper upon the surgical treatment of epilepsy. He considered that early operative statistics of cure (60 to 70 per cent.) were too sanguine, and accounted for the present sceptical attitude in regard to the hope of cure held out by operation. Graf and Braun have shown, in fact, that only 2 to 4 per cent. remain well for more than three years. The suggestion of Hughlings Jackson for excising the part of the cortex presiding over the functions of that portion of the body to which the ora are referred, was the first advance that resulted in an increased number of cures. Bergmann with this method records two out of twenty well for three years; Kocher a total of eight cases for the same space of time. He found in his analysis of one hundred and seventy-five cases, a class where the cause could be removed, such as bone splinters, dural adhesions, abscesses and tumours, that the apparent cure was 70 to 85 per cent. About 48 per cent. of the cases of epilepsy due to cysts, also recovered. Kocher believes that *the* etiological factor in the production of epileptic convulsions *is focal or general*

increase in blood pressure. Scars in themselves are not to be regarded as adequate causes of epilepsy; particularly those aseptic ones where there has been slight inflammatory reaction attending the healing. In experimental studies even aseptic foreign bodies within the brain or upon its membranes failed to cause epilepsy. Ito found in artificially produced epilepsy, with marked increase in intracranial pressure (3 to 5 times the normal), that when pressure was *removed* by trephining and opening the dura the attacks ceased. Kocher urges strongly that surgeons should bear in mind the effects of pressure in operative work, both of the affected and remote areas of the brain. Pressure, he believes, "is the unknown factor which is commonly called status epilepticus." The good results of his operation he attributes to the relief of pressure by the formation of this elastic diaphragm. He reports 58 per cent. of all cases cured to time of writing. Schär and Beresowsky in an examination of these *cured* cases declare that "the membrane covering the trephine opening is perfectly soft and freely movable, sinking when blood pressure is lowered, pushing outward when it is increased." The reverse condition was found in those not benefited. Kocher is led to infer that epilepsy may not be due always to the skull injury but to the manner of closure of the same by the surgeon. For intra-cranial pressure, due to cyst or fluid in the ventricles, he employs drainage continued over a long period of time. He suggests also the formation of multiple "valves" in the skull. Bergmann has operated upon a case of porencephalic cyst of congenital origin which would seem to bear out Kocher's theory. The immediate result of the paper will probably be renewed activity in the operative treatment of epilepsy. Schär [18] believes that operation should always be advised when medicinal and hygienic treatment does not quickly bring about favourable results.

Deschamps [19] reports two cases of extirpation of the superior ganglion of the sympathetic for the cure of epilepsy after the method of Jounesco. The immediate results were very satisfactory, but as the interval following operation had been too short no conclusions could be drawn.

Reynolds [20] has drawn attention to some uncertainties in the diagnosis of cerebral tumour. In Starr's list of one hundred and sixty-two cases no growth was found in forty-eight; in Knapp's list of four hundred and five there was nothing in ninety-two, while Bergmann found a growth in but one case out of six. The uncertainties in diagnosis he groups into two large classes: (*A*,) "When *no tumour exists* but other diseases are mistaken for it"; (*B*,) "When a *tumour*

is present, but (*a*,) 'the symptoms are ascribed to some other disease,' or (*b*,) 'there is a mistake in localisation,' or (*c*,) 'there is uncertainty in the nature of the tumour.'"

Under *A*, we have: (1,) *Chlorosis*, if optic neuritis with severe headache and possibly hysterical motor or sensory symptoms be associated together; (2,) *Uræmia*, with headache, optic neuritis, convulsions and coma, especially if the convulsions be unilateral; (3,) Chronic *lead poisoning* with headache, optic neuritis, convulsions and coma, and especially if there be paralysis of the cranial nerves; (4,) *Hysteria*, particularly with headache, vomiting, strabismus, and motor or sensory disturbances; (5,) So-called *reflex epilepsy* with unilateral convulsions; (6,) Certain "anomalous cases" in which symptoms of tumour exist, but the patients recover without operation or after an operation where nothing is found. Gould reported a case in which there was headache, aphasia, twitchings, facial palsy, and paralysis of the right side of the tongue with slow pulse. Operation revealed nothing. The patient gradually recovered. Phillips mentions a case. Reynolds himself cites two remarkable cases; (7,) *Syphilis of the cranial nerves* with severe headache, especially if syphilitic meningitis with local convulsions and optic neuritis be present; (8,) *Meningitis* or *brain abscess* may be mistaken for tumour, particularly if the onset is slow, no apparent cause exists, and some optic neuritis be present; (9,) *Polioencephalitis*.

Under *B*, tumour symptoms mistaken for other disease: (1,) *Hysteria*, especially if no optic neuritis or cranial nerve paralysis exists; (2,) *Reflex epilepsy*;* (3,) *Hydrophobia* has been diagnosed, with history of recent dog bite; (4,) *Senile dementia*; (5,) *Circulatory* changes, particularly if the symptoms appear suddenly and in old people; (6,) In *ear disease* the symptoms may be ascribed to abscess, especially if there be no optic neuritis.

(*C*,) Uncertainties in diagnosis of position. The tumour may not have been *found* or *recognised* at the operation, but after death at the site of operation or even in the resulting hernia cerebri. This is especially true of diffuse gliomata. Dinkler, Koster and Schultze report such cases. Reynolds reports a case presenting symptoms of tumour involving the facial area of the left motor cortex, but in which the tumour was found in the left second temporo-sphenoidal convolution. Schiller, Hitzig, Bury, Gibson, Zeller and others report such cases. In a case of Hitzig's a tumour supposed to be of the right cerebellar hemisphere was found as a cystic glioma of the frontal lobe.

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*Case falling under this heading reported.

Ataxia and disturbances of equilibrium are found both in frontal and cerebellar tumours.

(*D.*) Uncertainties as to the *nature of the tumour*. Intra-cranial aneurysm may be diagnosed or *vice versâ*. Excepting in the diagnosis of the *syphilitic* and *tuberculous* growths the distinction is not often made during life. Schmidt[21] reports two cases of cerebellar tumour which gave symptoms of increased intra-cranial pressure, vomiting, vertigo, etc., when the patient *lay upon the side*. He has taken the presence of intra-cranial pressure symptoms upon assuming the lateral decubitus as indicative of the presence of a tumour of the *opposite cerebellar hemisphere*. Bruce[22] has summed up his experience in cerebellar disease in an article upon the localisation and symptoms of disease of that organ. Lesions situated in the lateral lobes, if they are external to the intra-cerebellar paths of the superior and inferior peduncles and to the dentate nucleus, may produce no disturbance of equilibrium; disturbances of equilibrium *are* expected with lesions within the above area. Lesions within this space may not produce disturbances, provided they are *symmetrically* situated with regard to the mid-plane and their growth be slow and allow for compensation. Thorburn and others believe that notwithstanding the small success attending operation the hopelessness of the disease renders interference imperative, and that exploration would rather relieve than aggravate symptoms by reducing tension.

Stewart[23] reports two cases of tumour of the pituitary body in which no acromegaly was present although the gland was entirely destroyed. Unfortunately no surgical procedures have been instituted for these cases. Milligan[24] has reported an interesting case of cerebellar abscess, secondary to acute middle-ear disease. Temperature, pulse, and respiration were subnormal (the latter but 15). The patient ceased breathing during the operation, which was finished under artificial respiration. Recovery was slow but good. Fison and Luckham[25] report such a case. The patient was kept alive four hours by artificial respiration.

Howard[26] had an interesting case of septic thrombosis of the cavernous sinus for which no cause could be found.

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BRIGHT'S DISEASE. (See also "Retina.")

Prof. R. Saundby, M.D., LL.D., F.R.C.P.

In a paper, read at a meeting of the Royal Medical and Chirurgical Society, Dr. Hugh Thursfield [1] described the various forms of skin eruptions which have been met with in Bright's disease. He attributed their causation either to the effects of drugs or to a toxin or combination of toxins developed in the course of the disease. He thought the skin was affected either through the vaso-motor or trophic nerves, or by the direct action of the poison excreted through its glands. In the course of the discussion that followed Dr. Pye-Smith expressed the opinion that many of these eruptions were merely coincident and had no special relation to kidney disease. Dr. Radcliffe Crocker agreed that the association of albuminuria with skin disease did not necessarily imply kidney disease. Dr. Ringer thought it more probable that the toxins act directly upon the skin rather than through the nervous system. He suggested that there might be some microbic action at work. Dr. Caley referred to the frequent coexistence of exfoliative dermatitis with renal disease. The President, Dr. Pavy, held that these skin affections are primarily due to a poison the product of faulty metabolism, and that it acts upon the skin through the nervous system.

Reichel [2] claims to have proved that the dropsy of Bright's disease is due to a diminished power of absorption by the tissues, as he has found that a saline solution injected under the skin disappears very much more slowly in renal patients than in those suffering from cardiac dropsy or in healthy persons.

Holst [3] has met with three cases in which acute hæmorrhagic nephritis was caused by a more or less latent infection of the blood. In the first case streptococci were present in the blood, liver, kidneys, and spleen. In the second the staphylococcus albus was found in the blood during life, and in the third the staphylococcus albus was obtained by cultivations from the urine. Brill and Libman [4] have drawn attention to the comparative rarity of chronic interstitial nephritis in young persons, and to the probability that where it does occur it depends upon a family predisposition.

Poteenko[5] has treated successfully two cases of severe uræmia occurring in acute nephritis by subcutaneous injections of physiological **Salt Solution.** The quantity used was 300 c.c. (10 ounces). Both cases were completely cured. Lignerolles[6] has experimented with the blood of the renal vein of a young and healthy goat which was drawn antiseptically, the serum being allowed to separate and then put up in 20 c.c. bottles. This dose was injected subcutaneously in two cases, and its use was followed by improvement. Turbure,[7] of Bucharest, has used the blood serum from the renal veins of a dog with similar results. This treatment rests upon the hypothesis that the normal internal secretion of the kidneys may be found in the blood of the renal vein, and that it is capable of acting as an antitoxin against the hurtful substances which the kidneys in Bright's disease are unable to excrete. Bronowski[8] regards **Strontium Lactate** as a very harmless and useful drug for the purpose of lowering blood pressure. It does not cause renal irritation until the dose equals a grain for every kilogramme (2 lbs.) of body weight. It causes diuresis in all probability by dilating the blood vessels of the kidney. The dose is from 5 to 30 grains, and it is very soluble in water.

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BRONCHITIS. *Prof. H. P. Loomis, M.D., New York.*

A special variety of bronchial affection has been described by Hoffman under the name of eosinophile bronchitis. This name is used to designate a form in which the sputum is distinguished from that of other varieties of bronchitis by the presence of eosinophile cells in large number. The disease is a catarrhal affection of the bronchi of rather chronic course, though at times alternating with periods of completely normal condition. In normal condition only isolated eosinophile cells are present in the mucous membrane of the bronchi and trachea. The fundamentel origin of the disease is unknown, and it is more common in males than in females; is insidious in onset and gradually progressive in character; of protracted duration, or may be interrupted by long intervals of good health.

The treatment is essentially hygienic and dietary; includes gymnastic exercises and hydriatic measures, cod-liver oil, malt, iron and manganese peptonate.

Dr. Louis Devillers and Louis Renon[1] publish a remarkable case

of membranous bronchitis, in which the membranes periodically expelled by cough were found to consist almost entirely of the Aspergillus fumigatus and its spores. This mould is known to affect wheat grains, and the patient was a woman of thirty-nine years of age, whose occupation was the selection of grain for cultivation in poor soils. In the exercise of this occupation, not only was the patient exposed to a large amount of dust from the grain, but frequently placed some of the grain in her mouth.

The first symptom was a peculiar mouldy taste in her mouth occasionally, which was accompanied by a sensation of something in the throat, and disappeared after coughing up phlegm. A microscopic examination of the membrane, which was brought up later, showed it to be composed of mycelium, and cultivation proved this to be the Aspergillus fumigatus.

The internal administration of arsenic and other drugs and inhalations of iodine produced little effect on the disease. The case here recorded is peculiar in that the Aspergillus appears to be the primary cause of the malady.

The authors believe that more extended observation will show that such cases are less rare than would at present appear.

The Use of Cocillana as an Expectorant.[2]—From time to time new drugs derived from the mineral or vegetable kingdoms are brought before the medical profession, some of them quickly obtaining a reputation which they do not deserve, while others climb more slowly into professional favour and remain popular with a certain number of practitioners. Among the latter class may be mentioned the drug cocillana, which was first brought to the attention of the profession as a remedy by Professor Rusby, the well known botanist of New York, who, in a visit to Bolivia, in 1886, found that this plant was used for expectorant purposes. In very full doses it, like ipecac, produces emesis. It is evident from the reports which have been made upon it, notably by Stewart and Wilcox, that the drug may be employed as a stimulating expectorant for the purpose of aiding the patient in getting rid of bronchial secretion, and that under these circumstances it is capable of producing very excellent results. As this substance has not received the wide application which its therapeutic properties would seem to deserve, attention is called to it in order that it may be more definitely tried, and that more definite conclusions as to its exact value may be reached. There are three preparations of the drug that can be used. The fluid extract, dose 5 to 25 minims; the tincture, 1 to 2-fl. drachms, and the syrup of cocillana, 1 to 2 drachms.

Among the prescriptions recommended by prominent therapeutists during the year are the following :—

For Acute Bronchitis :—

[3] ℞ Ammonium Chloride		Tr. Hyoscyamus	fl dr. 6
Sodium Salicylate	āā dr. 2	Com. Licorice mixt. to make	fl oz. 3

One teaspoonful every three hours.

[4] ℞ Codeine	grs. 4	Ammonium Chloride	grs. 40
Dil. Hydrocyanic Acid	grs. 15	Syr. of Wild Cherry to make	fl. oz. 2

Teaspoonful every three or four hours.

Bronchorrhœa :—

[5] ℞ Benzoic Acid	grs. 60	Tannin	grs. 30

Divide into twelve powders. Give 1 powder four times daily.

Chronic Bronchitis :

[6] ℞ Acidi Carbolici	0·5	Spiritus Vini	10·0
Ichthyol	5·0	Aquæ Destill.	100·0

M. Sig.—Inhale.

Ichthyol in the Treatment of Chronic Bronchitis.—Dr. Le Tanneur [7] reports having cured cases of many years' standing with **Ichthyol** given internally in daily amounts of not less than ½ a drachm. He thinks it should be administered in such a form as to reach the intestine without having been freed in the stomach—namely, in gluten capsules.

Dr. Cassoute,[8] physician-in-chief to the Marseilles Hospital, gave a brief preliminary notice of his new method of giving **Creasote Carbonate** in the treatment of bronchitis, and his treatment has been elaborated by Dr. Corgier in a pamphlet entitled, "The Treatment of Acute Broncho-pulmonary Affections by Creasote Carbonate." The new method is distinguished by a certain rapidity of its curative effects not less than by its simplicity. The method consists in the continuous administration of fairly large doses of the drug, 10 to 30 minims. In most cases the typical fall of temperature occurs during the first twenty-four hours of treatment, and if this is continued for a sufficiently long period the apyrexia is permanent. The temperature curve will rise again, however, if the drug is discontinued before auscultatory signs disappear. The relapse frequently seen in other methods of treatment is here entirely absent. He claims that in the simple bronchitis of children this drug works wonders.

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CÆSARIAN SECTION. (See "Labour.")

CALCULUS OF URETER. (See "Ureter.")

CALCULUS (Renal). (See "Kidney.")

CALCULUS (Vesical). (See "Bladder.")

CANCER. *Keith W. Monsarrat, F.R.C.S.E.*

The statistics which have been collected by many authors since it was first suggested that cancer was on the increase, may now be fairly claimed to have established the truth of the suggestion and the futility of attempts to explain away the returns. The annual death rates from this disease to 1,000,000 living show a steady increase in England, Scotland, and Ireland. In England, the rate in 1877 was 486, in 1887 it was 615, and in 1897 it had risen to 787. In Scotland in 1883 it was 540, in 1890 610, and in 1897 770. In Ireland the cancer mortality has always been lower than in Great Britain, but the same steady increase is found; in 1897 the figure was 580, in 1881–82 it was 370.

Massey[1] has compiled some useful tables showing the growth of the rate in seven of the principal American cities. In 1870 he finds 35·4 deaths per 100,000 living, in 1898 66·4.

Statistics from other countries show the same actual increase in the registered deaths. Before statistics can be used to prove the actual increase or the contrary of a disease, certain corrections and allowances have to be made, and certain critics have attempted to show that when the necessary corrections have been made in the cancer statistics no real and actual increase can be exhibited. Increased accuracy of certification is supposed to account for a certain proportion. In 1889 the Registrar General made the following remarks on this matter: "It seems scarcely possible to maintain the optimistic view that the whole apparent increase can be thus explained, and it must be admitted as at any rate highly probable that a real increase is taking place in the frequency of this malignant affection." No evidence has since been brought to upset this view. It is not only in the more obscure cancerous diseases such as those of the viscera that an increase is found, but cancers of the tongue and of the breast, as well recognised if not as successfully treated twenty years ago as to-day, have been gradually growing in number in the returns. In regard to cancer of the tongue, Dr. Payne[2] has shown from the English and Irish statistics, and those of the admissions to St. Thomas' Hospital, that the disease shows an increase of something between 3 and 4 per cent. per annum. Accurate diagnosis has eliminated

from the cancer records many cases previously recorded as such, lesions caused by syphilis, tuberculosis, actinomycosis, etc. ; and if it has on the other hand added a certain number of visceral cancers, the balance is in all probability not much raised on one side or the other.

Owing to improved sanitation and the more successful treatment of certain curable affections in youth, an increasing number of individuals reach the age when cancer is most common. In the case of statistics drawn from small numbers corrections for age are therefore necessary ; that is to say, if there are in the locality above the average number of persons of forty and over, a corresponding proportion must be subtracted from the cancer cases before an absolute increase can be argued. With regard to the English statistics, the census of 1891 showed that the proportion of individuals above the age of forty-five had not increased since 1871, and Newsholme has shown that the correction for age, speaking generally, will only account for a very small proportion of the increased returns.

The theory that age will account for the increase is one not only of longevity but, by implication, one of substitution, and Payne, in 1898, gave it as his opinion that cancer killed those spared by a diminishing death rate from phthisis ; he has recently, however, acknowledged the insufficiency of this explanation. The comparative statistics of phthisis and cancer in England give some support to the idea, but in Scotland the increase in cancer has been accompanied by a much slighter diminution in the mortality from phthisis than in England, and in Ireland there has been virtually no decrease in the phthisis mortality at all.

In all statistics the increased mortality affects the male sex to a much greater extent than the female.

Some who accept the reality of the increase have sought for an explanation in a possible alteration in habits of life of late years. Sir William Banks [3] draws attention to the increased consumption of rich and abundant food, especially of animal food. He points out that it is the men who eat the heavy food in increased quantity and that it is amongst these that the cancer increase is most noticeable ; those also who have access to a liberal diet, butchers, commercial travellers, coachmen and grooms, innkeepers, give the highest mortality rates for occupations. Over-eating gives rise, he says, to a low form of gout which possibly is sufficient to serve as a determining agent of cancer, and in this way this general change in habit may serve as an explanation of the increase. Mr. Roger Williams and Sir James Sawyer have also given their adherence to the suggestion.

With regard to the seat of the disease, cancer of the sexual organs remains about the same in frequency, while cancer of the digestive tract shows the greatest increase.

Reiche's[4] statistics for Hamburg probably give a higher percentage of disease in this system than a larger survey would provide; they are remarkable. In 4579 cases in which the seat of the disease was stated, the digestive system, including the liver, was responsible for 85 per cent. in men, and for 40 per cent. in women. Payne also draws attention to the marked predominance of cancer of the digestive organs in the general increase, and the almost stationary position of the disease in the sexual organs. The fact supports the suggestion that alteration in diet may have an influence in the increase.

Distribution.—In the northern hemisphere cancer is a disease of the temperate zone. In Europe it is almost unknown north of Norway and Sweden, and in the south, Turkey and Greece have a comparative immunity. In Asia, northern China and Japan supply the greatest number of cases, while in Siberia and southern China it is rare. In America the northern parts are again exempt, but throughout the States and Canada the mortality is high. With the exception of Australia, where the disease is common, statistics for the southern hemisphere are inexact; it appears to encroach further into the tropics than in the northern hemisphere.

An important addition to the study of the local distribution of the disease has recently been published by a committee of the Birmingham and Midland Counties branch[5] of the British Medical Association. Investigations have been made throughout the Counties of Warwick, Stafford, Salop, and Worcester. The population represented is more than 860,000, and 5,300 cases of cancer have been collected and tabulated. In the report the returns for the various registration areas are set out in detail. The female cases largely exceed the male in number (3018 to 1837); this is almost entirely due to the large number in which the uterus or female breast is the organ affected. If organs peculiar to either sex be excluded the male cases exceed the female by 6 per cent. In 2399 instances the digestive tract was the seat of the disease, including under this heading all those returned as cancer of the abdomen, liver, pancreas and mesentery. Of individual organs affected the stomach stands highest on the list, then in order, the uterus, the breast, and the rectum.

A study of the report shows that there are certain districts where the mortality from cancer is noticeably above the general average for England and Wales, *i.e.*, 58 per cent., and also districts where it is much below this figure. Further, it is shown that there occur

smaller, well-defined areas where the percentage is very high indeed, and also even in districts where mortality for the whole is low there are instances of streets and groups of houses where the disease has been very frequent. A high death-rate is in many, and indeed in most cases, said to be associated with defective drainage of the soil and subsoil and their contamination with sewage, and neighbourhoods that have been long inhabited supply a larger number of cases than new streets and new houses. On the other hand no connection was found to exist between any particular geological formation and prevalence of the disease; in several returns it was stated that the cases were more frequent in districts with a clay subsoil, while in others the larger number were found where the subsoil was sandy or gravelly.

The committee have taken the returns from several districts where the death rate is high and corrected them for sex and age; they find that these corrections account only for a small proportion of the total increase on the expected number of cases. As an example of unusual prevalence in groups of houses, a certain street in Leamington contained five cases in ten years: the houses were numbered alternately on the two sides, and the cases occurred at 3, 5 and 7 on the one side, and at numbers 4 and 6 on the other. Evidence was also forthcoming that second and third cases occur in the same house with greater frequency than can be accounted for by mere coincidence.

The statistics given by Behla[6] relating to the town of Luckau are perhaps the most remarkable hitherto published, illustrating the special cancer prevalence in certain districts. The town, of 5,000 inhabitants, consists of a central part and two suburbs. The percentage in the centre is about the general average, in one suburb built on a sandy substratum very few cases have occurred, but in the other built on what was marsh land, the cancer deaths are 15 per cent. of the total deaths. In this suburb, in one street, twenty-seven houses have supplied forty cases in the last twenty-five years, and there are several instances of the disease occurring three or four times in one house. Behla suggests a connection between this prevalence and a large consumption of uncooked vegetables. The inhabitants of the suburb are chiefly farmers and nurserymen, and live to a great extent on these vegetables, which are largely here infected with certain parasitic diseases, notably that caused by plasmodiaphorabrassicæ.

Recently a committee has met in Berlin, on the invitation of Prof. Leyden, to arrange a great collective investigation on cancer. This committee will include representatives of the Imperial Health Office, the Government Medical Department, and the Statistical Office.

Pathology.—Professor Adami,[7] in an interesting paper on cell

multiplication in relation to the regeneration of tissues and the development of tumours, finds three possible sources of origin of the cells of the latter. Tumours are the result of aberrant tissue growth, and this growth is due to certain cells assuming excessive proliferative properties wholly outside the needs of the economy. These cells may be derived from : (*a*,) Embryonic "cell rests" which have remained latent and then taken upon themselves a rapid proliferation ; (*b*,) The "mother cells" of a tissue, from which under ordinary circumstances the fully developed cells of the tissue arise, and which are less specialised than their daughter cells ; these may take on excessive proliferative tendencies, the daughter cells now retaining more or less the simpler characters of the mother cells ; (*c*,) The specialised cells may revert to a simpler type, and gain in this way the capacity for excessive proliferation. Such reversion takes place in later life in glandular organs, and Adami suggests that along with this may occur a greater liability to excessive multiplication. He evidently favours the view that cancer may arise as a sequel to *causes inherent in the structure of the tissue* affected. One is tempted to hope unscientifically that this view may not be true and that some method of origin nearer our comprehension may represent the real facts of the case. From such a hope has arisen the almost enthusiastic reception accorded to any evidence pointing to an external determining cause of the disease. Such a cause may be conceivably either (1,) specific or (2,) non-specific, and the theories of origin lately advanced may be separately considered according as the authors favour the one or the other opinion.

I.—The suggestions of Adami recall the theory of Thiersch, who explains the prevalence of carcinoma in later life on the ground of altered relationships between the elements of tissues, whereby the connective tissue element becomes looser in texture and less resistant to any proliferative tendency on the part of the epithelial element, so that if this tendency should arise the epithelial cells easily make their way into lymph spaces and channels. The marked connective tissue proliferation, which has the appearance of being resistant in origin, and which we find in many carcinomata, militates against this theory. Thiersch finds the necessity of supposing some definite and probably external cause for the epithelial proliferation.

The theory identified with the names of Ribbert and Fabre Domergue, is that cancer arises from disorientation of epithelial cells and disturbance of their natural relations, in consequence of which they develop tendencies to abnormal multiplication. Ribbert holds that all epitheliomata arise from a connective tissue growth beneath the epidermis, by which a sub-epithelial granulation tissue is formed.

This grows in the interpapillary spaces, and the connective tissue cells making their way in between the epithelial cells the latter are isolated. In virtue of this dislocation they assume proliferative tendencies. In support of the theory Ribbert cites a number of cases where cancer appears to have supervened on tuberculosis, and especially on lupus. Similar cases have been recorded by Lubarsch, Schwalbe, Wolf and others, but most of these adopt the view that the tuberculosis acts simply as a pre-disposing cause in the same way as any tissue damage may encourage the appearance of cancer.

Babes[8] suggests that the causes of the disease may be many, that in fact any irritation mechanical or chemical may be capable of setting up the epithelial proliferation, provided it acts upon a tissue predisposed. The question of such predispositions has been, he says, somewhat neglected of late on account of the great bacteriological discoveries, and it must be asked whether peculiarities inherent in the structure of an affected tissue are not capable of impressing on diseases characters analogous to those of specificity. Babes's researches on carcinoma developed in chronic tubercular lesions and in cirrhotic livers, and supervening on leukoplakia of the tongue support the view. To the nature and origin of the predisposition which, unlike Ribbert, he finds a necessary preliminary of the process, he suggests no clue. The theory of Ribbert has not received much support chiefly, perhaps, because it is not at all obvious why invading granulation tissue cells should impart to the invaded epithelium the capacity for indefinite multiplication which is characteristic of cancer cells. The epithelial changes in lupus for example are in essence destructive, and the proliferation that takes place is unstable and, as it were, a by-product. Again, the process in lupus is on the same general plan at all ages ; why is it then that the co-existence with carcinoma is a pathological curiosity, even at ages when epithelioma is common ?

This theory is related to what has been called the mechanical theory of the origin of cancer, *i.e*, that the displacement of normal epithelium into lymph spaces and lymph channels is sufficient to bring about the growth of carcinoma. A specimen of carcinoma in the rabbit was shown by Mr. Shattock[9] to the Pathological Society on Jan. 16th last, in which the structure of the growth and the uterine changes were so like those found by Lack in the rabbit used for his well-known experiment (see "Med. Annual," 1900, p. 121), that this experiment must be repeated before any deduction can be made from it. Mr. Shattock points out that examples of displaced epithelium and the growth that may occur therefrom are found in the epidermal cysts of the palm and

fingers, and in the cysts which follow the rupture of an ovarian dermoid. Such cysts are simple and have no malignant characters. The papillomata which follow the rupture of an ovarian papilliferous cyst do not support the theory, for such a cyst is distinctly a pathological new formation. These papillomata have the general features of contagious warts, and McFadyean and Hobday have proved not only the contagiousness but also the inoculability of similar papillomata in dogs. Lubarsch and others have injected emulsions of various glandular organs into the jugular veins of rabbits without producing growth in any part of the body. Small portions were also detached and either allowed to remain *in situ* or transplanted into the organs of other animals ; in every case these portions disappeared after a time. Lack's experiment is therefore the only evidence of the kind which supports the mechanical theory, and there is a large amount of negative experimental evidence on the other side.

II.—Although Babes appears to favour the opinion that the determining cause of cancer is non-specific, he urges the necessity of further experiments for the discovery of a possible specific and parasitic agent. Growths coccidian in origin, he says, have been shown to be papillomatous, not cancerous, and those following the injection of blastomycetes have the characters of chronic inflammation. Other methods of investigation should be sought, and the question as to whether there are endemic or epidemic outbreaks of cancer should be closely studied.

Schüller,[10] without discussing the etiological relationship with the disease, describes certain corpuscles which he has found in every specimen of carcinoma examined, of very characteristic type and in various stages of development. They are round or oval, and about three times the size of a red blood-cell, and of a golden yellow or brownish colour. They possess a refractile capsule which is highly resistent and sometimes stratified. Schüller's method of cultivating them has been by cutting slices of the growth itself, and incubating them at the body temperature ; when successful, grey droplets appear on the surface of the section and these consist of collections of the described organisms which he considers a protozoon. It appears to be morphologically similar to the organism described and pictured in the "Medical Annual," 1900. Leopold[11] maintains that there can be no doubt that an etiological relationship exists between the blastomycetes found in malignant growths and those which have experimentally produced new formations. He bases this assertion, as far as he himself is concerned, on a single observation. He found a blastomyces in a fresh ovarian carcinoma and isolated it in pure

culture. This he injected into the testicle of a rat and produced a great number of peritoneal nodules, which caused the death of the animal; from these nodules the blastomyces was again isolated. Such an observation proves nothing in any degree new, and it cannot be legitimately claimed that because an organism is found in a growth and isolated therefrom, and on injection produces "nodules" and causes death—it cannot be properly claimed that there is no doubt in such a case that the organism is the actual cause of the malignant growth from which it was isolated in the first instance.

There can, however, be now little doubt that certain parasitic organisms with distinctive characters are present in most, if not in all carcinoma, and possibly sarcomata also. Their morphological characters have been described by several, more or less completely, but of their true classification we are still uncertain, and of their cycle of development we have only an imperfect picture. The fact that these organisms have proved capable of stimulating multiplication of the cells of tissues with which they come in contact is highly suggestive of the possibility of their playing an etiological *rôle* in cancer. This suggestion is at present some considerable distance removed from scientific proof.

Sjöbring[12] has, however, recently brought forward the most complete observations on the morphology of the organisms hitherto published. They resemble, he says, no animal or vegetable parasite of known characters. He describes three main types: amœboid, rhizopod, and involution forms. Some of the latter exactly resemble the so-called "cancer bodies" of carcinoma. Up to the present he has experimentally inoculated them into white mice alone, and has obtained four positive results out of eight animals injected. In two there followed epitheliomatous new growth, in a third a growth resembling adenoma of the sweat glands. A culture o a similar parasite from a colloid cyst of the ovary produced in the peritoneum small cyst growths lined by epithelium.

Carini[13] has examined fourteen cancers aseptically and found no blastomycetes, but procured a culture from a papilloma which had been exposed to the air for some time. He thinks the blastomycetes found are due to contamination. He is also of opinion that the bodies described as sporozoa by many authors are entirely different and distinct from the bodies called blastomycetes by Sanfelice, and that the two take entirely different stains. In all probability much of the confusion which has arisen from the very diverse descriptions of the organism by different authors, is due to the fact that it has forms

and stages of development morphologically and chemically different from each other.

Czerny,[14] remarking on the insufficiency of histological observation to carry the pathologist any considerable distance towards the discovery of the cause of tumours, gives his reasons for considering the parasitic theory as the one most in accordance with the pathological facts. According to clinical knowledge we must assume for the production of new growths, says Czerny, a disposition and an active cause. The disposition may possibly be an inherited general tendency, or local and acquired. The local disposition may arise from chronic inflammatory conditions of all kinds, eczema, catarrh, ulceration—which may again be caused by all varieties of irritants. When the localisation of cancer of the epidermis is considered it is found to occur on exposed parts, while those that are habitually covered are comparatively immune. It usually occurs on the surface of skin or mucous membrane that has been irritated ; to this, particles of dust or intestinal contents tend to adhere, and in all probability on such particles the unknown cause of cancer vegetates. Cancer cannot be treated as an infectious disease in the ordinary sense of the word ; but the cases of transmission from one individual to another, the implantation metastases, the relatively numerous cases amongst blood relatives and married people living under the same roof, prove that the tumour elements can be transmitted and flourish anew on fresh ground. Czerny does not believe that there is one and the same specific cause for all cancers, but since it is impossible to draw a sharp line between new formations due to inflammatory processes and true tumours, it may be assumed that as we have as great a number of organisms as causes of inflammations, so also in the case of tumours the specific agent is not always the same.

Cases where a direct connection can be shown between trauma and the development of cancer have not hitherto thrown any light on the question whether the cause is specific or not. Sir William Banks,[15] admitting that women are always anxious to find a cause for their malady, yet considers that the history of previous trauma in breast cancer is so common that there must be a distinct element of truth in it. In such cases if the causal agent be specific it must be in the tissues and ready to devote its energy to any suitable *punctum minoris resistentiæ*, such as that produced by the injury. Not unfrequently in cancers of the skin there is a history of a distinct wound which refused to heal and later developed into a definite carcinoma.

Würz[16] in an analysis of 713 cases of new growth occurring in Brun's Clinic in five years, has given details of 19 where a connection with an earlier trauma could be traced. Two examples may be given here. A man, aged sixty-eight, received a wound from the horn of an ox; this did not heal, and some months later he presented himself at the Clinic with a well-marked carcinoma. A man, aged fifty-four, was hit in 1892 by a falling apple, and a small wound of the left cheek resulted. There was no healing, and in the following year the ulcer showed distinct carcinomatous features.

A case of the same kind is described by Hahn.[17] In August, 1898, a man fell on his head on the road, the wound remained open for seven weeks and suppurated. In December, 1899, he had here an ulcerating carcinoma.

The histological details of such cases have not hitherto been carefully studied, and the writer has not been able to find one in which any searching examination for organisms has been made. There is a great difference in the incubation period in the different cases, from a few months to several years; some cases of "traumatic" sarcoma give a history of more rapid development than any recorded carcinoma following injury. These cases strongly argue against any theory of cancer which does not include the conception of a distinct causal factor not inherent in the tissues themselves, but they have not been investigated in such a way as to throw any light on the question whether such causal factor is specific or not.

THERAPEUTICS. — Czerny[18] argues against the performance of operations when the disease is so extensive as to make it improbable that removal can be complete. Incomplete operations as a rule hasten the development and spread of the disease. Inoperable cancer can be cauterised with zinc chloride not only with impunity but sometimes with the best results: often at least a temporary healing and improvement follows. Abdominal cancer seems sometimes to be benefited by a simple laparotomy as is tubercular peritonitis. Czerny has seen eighteen sarcomata completely cured by Coley's fluid.

Sir William Banks' statistics (Lettsomian Lectures, 1900) give the results obtained by removal of the whole mamma with a wide skin margin, together with the pectoral fascia and the contents of the axilla. Care is taken to remove the whole in one mass. This method of operating was first recommended by this surgeon in 1877, and has since been systematically followed. The cases available for statistical comparison are 175, of these no local recurrence occurred in 108, and 73 have lived beyond the three-year period. Absence of local recurrence means successful removal of the growth. Local recurrence is

recorded in 67, and in 30 metastatic growths in the organs were the cause of death. We have then :—

Total Cases	Known Recurrences or Metastases	Cures
175	97	44 %

Local recurrence occurred beyond the three-year limit in no less than 28 of the cases, and metastatic deposits in 17 after a similar period. This limit is therefore fallacious as a criterion of success. The method of operating appears to give results which compare favourably with those obtained by the more extensive procedures of Halsted and Watson Cheyne.

In the lectures considerable prominence is given to the relation between chronic interstitial mastitis and carcinoma, and it is urged that it is a right and proper thing in many cases to remove breasts the subjects of chronic mastitits, even before cancer can be definitely diagnosed in them. The operation may be done by making a semi-lunar incision along the lower border of the mamma, dissecting up the skin and nipple and laying them down again after the gland is removed, provided there is no sign that palpable carcinoma exists. This can usually be decided from the naked eye appearance of sections of suspicious nodules.

Behla [19] believing that evidence of the infective nature of cancer is accumulating, insists on the necessity for certain prophylactic measures. There is probably a connection in some cases between the prevalence of the disease and stagnant water. Such water should not be used for drinking or any household purpose. Stricter regulations should be in force in regard to the storage of fruit and vegetables, as some evidence seems to point to the carriage of infection on these articles of diet. The secretions of carcinomata should be looked upon as capable of conveying infection, and everything which comes in contact with these should be disinfected. Many cases are on record where infection seems to have been conveyed by attendants on cancer patients to their own persons by the fingers, and Parker has drawn attention to the fact that the parts of the face most frequently touched by the hands are those most commonly affected with cancer, and *vice versâ*.

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CANCER OF THE UTERUS. (See "Uterus.")

CARBUNCLE.

Synopsis.—(Vol. 1900, p. 126). Parker advises total or palliative extirpation by **Excision** and **Scraping**. Manley injects 2 or 3 up to 15 drops of **Carbolic Acid Solution** 80 to 90 %, and the earlier the injection the better. Ashe advocates **Anti-Streptococcic Serum Injections**.

CATARACT. *F. Richardson Cross, M.B., F.R.C.S.*

Among the most troublesome accidents which may complicate the extraction of the crystalline lens for the cure of cataract are malposition of the corneal flap, prolapse of vitreous and intra-ocular expulsive hæmorrhage. For several years past some surgeons have been in the habit of attempting to treat these complications by suture of the corneal flap to the sclerotic, and in 1894 M.M. Trousseau and Chivallireaux each reported a successful case to the Ophthalmological Society of Paris. Dr. Pierre Dolbeau [1] writes recommending suture by means of a short curved needle which should be passed from without inwards through the summit of the corneal flap about a millimètre from its border, and then from within outwards through the scleral lip of the wound. In cases of simple malposition of the flap it is sufficient to unite the cornea to the conjunctiva, but when vitreous escapes the superficial fibres of the sclerotic must be included in the suture.

Risley [2] also advocates corneo-scleral suture in critical cases of cataract extraction. The method which he employs was devised some years ago by Kalt, of Paris, and differs essentially from that just described. It is applied in the following manner: As the first step in the cataract operation a sharp needle curved on a short radius and without a cutting edge is passed well into the substance of the clear cornea about 2½ millimètres from its margin and brought out again near the limbus without penetrating into the anterior chamber. It is then passed in a similar manner through the episcleral tissue just behind the corneal limbus, leaving between its scleral and corneal portions sufficient space for the incision. A loop of thread two or three inches long is left between the two insertions of the suture, and is placed on one side to avoid being cut during the extraction of the lens. The cataract is then removed in the ordinary manner, and

as the last step in the operation the lips of the wound are brought together by tightening the suture.

Practically all ophthalmic surgeons are agreed that it is in very exceptional cases that corneo-scleral suture is justified, and the method advocated by Risley can only be recommended in those rare cases in which the occurrence of complications has been anticipated as almost inevitable. The writer has employed the ordinary method in several cases, but the results have not been such as to lead him to resort to it except very occasionally.

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CHEYNE-STOKES RESPIRATION.

Prof. H. P. Loomis, M.D., New York.

As regards the various theories to account for Cheyne-Stokes respiration, the one which has attracted most attention is that of Rosenbach. This observer insists that the explanation of the phenomenon is to be sought not in the vascular system but in the nerve-cells of the central nervous system, especially in the respiratory centre in the medulla oblongata. The healthy nervous system shows, as in fact do all the systems of the body, a periodicity of activity and rest. When Cheyne-Stokes respiration is present, the whole central nervous system may be affected in its irritability; this is shown by the changes in the pupils, and in the general twitchings of the body. Periodic changes in the supply of blood to the brain are not essential for the causation of the phenomena.

Rosenbach's view is supported by the occurrence of Cheyne-Stokes respiration when the excitability of the nervous system is diminished normally by sleep in infants and adults, and by the torpidity of hibernating mammals, abnormally by drugs and by diseases which affect the nutrition of the nerve cells.

We see, therefore, that Cheyne-Stokes respiration is not diagnostic of any disease, although it throws marked light upon the excitability of the nerve cells.

TREATMENT.—Rabe[1] gives an elaborate description of Cheyne-Stokes breathing and suggests the following treatment: **Morphine,** notwithstanding earlier observations to the contrary, has been found of distinct value by Huchard, Gubler, and others. It seems to allay anxiety, relieve the dyspnœa, and to induce sleep. It should be administered at night, and in small doses, on account of the frequent association of chronic nephritis. According to Rabe, who cites many instances, a combination of morphine with digitalis is the most

efficient remedy when the dyspnœa is a symptom of atheroma with weak heart.

REFERENCES.—[1] "Gaz. hebdom. de Méd. et de Chir.," Jan. 22, 1889; "Univ. Med. Mag.," Sept. 1899.

CHILBLAINS.

Synopsis.—(Vol. 1900, p. 130). Jones advocates an **Electric Foot Bath** used at bedtime for eight or ten consecutive nights. As liniments, ℞ Chloroformi, ʒij; Lin. Belladonnæ, ʒss; Tinc. Benzoini Co., ʒij; Lin. Saponis, ʒiij. To be applied on Lint and *not* rubbed in. ℞ Aconitiæ, gr. ss; Atropiæ, gr. ss; Sp. Rect. ʒj; Morph. Hydrochlor., gr. ij; Lin. Pot. Iodid. c. Sapone, ʒij; Ol. Amyg. Amar., ♏iij; Tere bene simul. Ft. Lin, 20 or 30 drops to be rubbed in night and morning to the part affected; or, ℞ Lin. Aconiti, ʒiss; Lin. Bellad., ʒiss; Tinc. Opii, ʒiij; Ol. Amyg. Amar., ♏v; Vel Ol. Lavand., ♏x; Lin. Saponis, ad ʒij. M. Ft. Lin. Apply ʒss to ʒj night and morning to the painful part.

CHOREA. *Græme M. Hammond, M.D., New York.*

Dr. L. J. Smith[1] accepts Guthrie's classification. He recognises two types: (1,) The sthenic, or explosive; and (2,) The asthenic, or pseudo-paralytic. For the former group, sedatives such as **Chloral**, the **Bromides** and **Antipyrine** are indicated; and for the latter, tonics like **Quinine, Arsenic, and Strychnine** are required. In both cases rest in bed is essential. In some cases 20 or 30 drops of the fluid extract of **Cimicifuga** for a child ten years of age have been found useful when arsenic has failed. In those cases in which the disease is associated with rheumatism, the **Salicylate** or **Iodide of Sodium** should be employed. When the choreic movements are so severe as to prevent sleep, a **Hot Pack** at bedtime will often induce a quiet night. Lichtschein[2] states that although arsenic, salicylate of physostigmine, enormous doses of carbonate of iron, chloroform, narcotics, cold water treatment, and galvanisation have been used with more or less good results; there is a small minority of cases in which these remedies do not effect a cure, and the disease lasts for years. In such cases he recommends **Continuous Sleep**, induced by the frequent administrations of large doses of chloral. He adds to the literature of the subject, by reporting three cases treated in this manner. The first was a girl twelve years old. She had had chorea two years. He began with a dose of 15 grains of chlora and $\frac{1}{200}$ grain of sulphate of strychnine every two hours. As this failed to produce sleep the dose was by degrees raised to 30 grains. This produced a deeply somnolent condition, and the dose was immediately reduced to 25, and then to 20 grains every two, three, or four hours, according to the degree of sleep produced. From the beginning her appetite improved and her weight increased. Treat-

ment was continued twenty-five days. By that time she had gained over thirteen pounds. The average daily quantity of chloral given during the first twenty days was about 120 grains. During the last four days the chloral was gradually diminished. The choreic movements did not reappear after wakening. A little more than two years had elapsed since treatment was discontinued, but there had been no return of the disease.

The treatment of the other two cases was similar in every respect, except that in one of them much smaller doses were found to be adequate, and the sleep was continued for eighteen days only. Both were permanently cured.

Luigi[3] has met with success in treating chorea with **Oil of Gaultheria**. He uses from 6 to 10 grains of the oil either pure or mixed with vaseline, as dressings applied to the limbs, which were afterwards covered with oiled silk to prevent evaporation. The applications were made to the upper and lower limbs alternately. Phenol could be detected in the urine six hours after the oil was applied. In some cases the drug was given internally as well. The good effects of this treatment were not confined to cases in which distinctly rheumatic symptoms were present.

Del Pozo[4] reports thirty cases treated by massive doses of arsenic rapidly increased until the gastro-intestinal canal of the patient rebels, as manifested by vomiting and diarrhœa. As soon as these symptoms are developed the dose is cut down by day, until a quantity is reached which the patient can bear. He asserts that such treatment usually produces a cure within nine days, and that accident from this method is rarely met with. Four of his cases, however, suffered from arsenical neuritis.

The writer is entirely opposed to this method of treatment. Four cases of neuritis out of thirty cases treated (over 12 per cent.) must speak loudly against such toxic doses, even if there were no other objections. But when it is remembered that all the cases were poisoned until they suffered from gastritis and enteritis, one cannot but think the remedy worse than the disease. It is never necessary to use remedies to such an extent that they become poisons. Arsenic is a most serviceable remedy against chorea, and large doses are generally necessary, but its administration should be controlled by common sense.

A tendency has arisen of late to consider chorea[5] as an infectious disease, although the evidence of this theory is more circumstantial than direct, and is therefore, as yet, inconclusive. A point to which some significance can be attached is the probability that acute

rheumatism, with which chorea exhibits certain relations, is also infectious, though perhaps of multiple origin. Westphal, Waserman, and Malkoff, support the theory that chorea is infectious in origin, and report a case of acute articular rhematism, followed by chorea, and complicated by endocarditis and nephritis, in which they succeeded in isolating from the blood, the brain, and the endocardial vegetation, a streptococcus capable of inducing polyarthritis in lower animals. Mircoli, in seventeen cases of rheumatic chorea found pyogenic cocci in the joints of fourteen, staphylococci preponderating, while in three cases the diplococcus lanceolatus was present. From a number of considerations, acute rheumatism is looked upon as a variety of pyæmia, but without suppuration ; and chorea as a manifestation of the cerebral localisation of the pathogenic agency.

REFERENCES.—[1] "Treatment," Feb. 8, 1900 ; [2] "Med. Rec." April 1, 1900 ; [3] "Brit. Med. Journ.," Jan. 11, 1900 ; [4] Ibid., Nov. 11, 1899 ; [5] "Med. Rec.," Oct. 6, 1900.

Henry Dwight Chapin, M.D., New York.

Dr. S. D. Hopkins [1] treats chorea with **Rest** and **Antipyrine.** In all except the mildest cases, absolute rest in bed, day and night, is insisted on from the first. If he had to rely upon one method of treatment, to the exclusion of all others, he would choose absolute rest in bed. The treatment is begun by ordering as many grains of antipyrine, three times daily, after taking food, as the child is years old, and increasing the dose 1 grain each day until all violent movements stop, when he begins with 1 drop of Fowler's solution after each meal, well diluted in water, and increased 1 drop each day until the point of tolerance is reached. About the second or third day after the arsenical treatment has been added, the antipyrine is given only once each twenty-four hours, and the time for its administration is usually about eight or nine o'clock in the evening, thus securing a comforable night for the patient. If there is cardiac dilatation or a valvular lesion, antipyrine should not be given.

REFERENCE.—[1] "Denver Med. Times," vol. xix, No. 5.

CLEFT PALATE. *Priestley Leech, M.D., F.R.C.S.*

Carl Beck [1] treated a case of cleft palate by implantation of a portion of the tongue. The Langenbeck and Davies-Colley operation had both failed, so he formed a lateral flap from the tongue which, after being turned and reflected near the base, was united with the freshened edge of the cleft of the same side. The gaping wound margins of the tongue were united and the floor of the mouth and the lingual angle were packed with iodoform gauze. Liquid diet was

given exclusively, and a mild solution of boric acid was sprayed through the nostrils every fifteen minutes. After nine days the base of the flap was severed, and a week later the flap was united with the opposite margin of the cleft.

REFERENCE.—[1] "New York Med. Jour.," June 30, 1900.

CŒLIOTOMY. (See "Pelvis, Surgery of.")

COLOUR BLINDNESS. (See "Vision.")

CONDYLOMA ACUMINATUM. *T. Colcott Fox, M.B.*

G. Rasch[1] concludes that condyloma acuminatum is a parasitic disease akin to warts and molluscum contagiosum and without relation to gonorrhœa. The period of inoculation is two to four months. Cathcart recorded the direct transmission and Ducrey and Oro observed psorosperm-like bodies.

REFERENCE.—[1] "Derm. Centralb.," iii., 1900, p. 162.

CONJUNCTIVA (Diseases of). *F. Richardson Cross, M.B., F.R.C.S.*

During the past year much attention has been paid to the action and value of the various albuminates of silver (*v.* "Medical Annual," 1900, p. 138). The following are some of the more important opinions which have been published on the subject:—

Sydney Stephenson[1] has given both **Protargol** and **Largin** an extensive and careful trial in the various forms of conjunctivitis and also in dacryocystitis. The conclusions which he has formed as to their value may be summarised as follows:—

In gonorrhœal ophthalmia protargol is more efficacious than largin or nitrate of silver. It may be used for painting in a 30 per cent., and as a lotion in a 3 per cent. solution.

In acute muco-purulent conjunctivitis due to the Koch-Weeks bacillus, largin in 10 per cent. solution is superior to protargol, and as efficacious as nitrate of silver (2 per cent.), than which it is much less irritating.

In diphtheritic conjunctivitis protargol is apparently of value, but since it was used only in conjunction with injections of antitoxin it is difficult to say how much of the good results obtained depended on the local treatment. It is possible that any effect produced by the protargol may have been due to its action upon some of the other micro-organisms which are always present in such cases as well as the Klebs-Loeffler bacillus.

In trachoma largin (10 per cent.) acts admirably in acute cases; both largin and silver nitrate are superior to protargol.

Pergens[2] has employed protargol in solutions varying in strength from 2 to 10 or even 20 per cent. He obtained particularly good results in cases of acute conjunctivitis, but does not think so highly of the value of the drug in the chronic forms of the disease associated with hyperplasia.

Emmert[3] has published a report on three hundred and fifty cases treated with protargol. He uses a solution varying in strength from 1 to 3 per cent., and finds that cases of conjunctivitis are usually relieved by it in from two to three days: when very severe they may last eight days, while cases of ophthalmia neonatorum may be cured in from six to eighteen days (iced compresses were used in addition to the drops). He also recommends protargolin cases of eczematous keratitis, ciliary blepharitis and dacryocystitis.

Chennery[4] has obtained good results in conjunctival diseases, especially ophthalmia neonatorum, from the use of protargol in 2 to 4 per cent. solutions.

Brumon[5] recommends for the treatment of ophthalmia neonatorum weak solutions of protargol combined with applications of ice every three minutes, and irrigation of the eyes twice daily with sterile salt solution. In the later stages he uses protargol in 10 to 20 per cent. solutions, or sulphate of zinc.

Peck[6] says that in cases of purulent ophthalmia in infants treated with protargol or argonin ulceration of the cornea, with iris protrusion and imprisonment, is rare; the gonococci have disappeared in from two to four weeks, or more quickly than by the older method; there have been earlier disappearance of the secretion and control of the inflammation; the restoration of the injured cornea and conjunctiva has been more prompt, and the patient has suffered much less. He considers that the most effective strength for the argonin is 3 per cent., and he uses protargol in a 1 or 2 per cent. solution.

Dr. Clarence Vesey,[7] of Philadelphia, reports that he has found a solution of **Toluidin Blue,** which is a powder soluble in water or alcohol, of great service in the treatment of severe superficial inflammations of the eyeball or of its appendages. He uses a lotion of 1 in 1000 in cases of dacryocystitis and conjunctivitis (particularly when purulent), and in corneal ulcers, and he states his opinion that unusually rapid and satisfactory cures result. The drug has also been found of service in the local treatment of urethritis. Its chemical composition is very complicated and not in any way analogous to the pyoktanins, which in action it seems to resemble.

For the treatment of trachoma Moby[8] recommends local applica-

tions of **Salicylic Acid.** A 10 per cent. solution of the drug in alcohol is applied to the granular surfaces with a pledget of absorbent cotton wound on a metallic holder. A few seconds only are needed for the application The treatment is said to be somewhat painful at first, but the irritation quickly abates and then relief is said to follow, much more marked in degree than with other topical applications. The cornea, moreover, it is said, tolerates salicylic acid perfectly without becoming pigmented should ulcers be present. The cauterisations are repeated at first daily, then every two days, and finally once or twice a week. No other treatment is called for in uncomplicated cases. The addition of 1 per cent. of cocaine to the solution would probably dispose of the initial pain.

Bloebaum[9] also advocates the use of salicylic acid which he employs in conjunction with sulphate of copper in the following ointment :-

R	Cupri Sulphatis	Cocainæ	āā 0·1
	Acidi Salicylici	Petrolati	10

Lea[11] (Grahamstown) from a consideration of the action of **Acetic Acid** upon the lymph corpuscles, has been led to apply it to the lymphatic tissue of trachoma nodules and has found very beneficial results to follow. He uses it in the following manner : After cocainising the eye and washing out the conjunctival sac he pricks each visible follicle with a needle dipped in the dilute acid, and repeats the application every third or fourth day until no trachoma nodules are visible. He then treats the granulations on the lids with applications of sulphate of copper. If there is great irritation he recommends scarification of the conjunctiva followed by the application of strips of lint soaked in boracic acid lotion.

REFERENCES.—[1] "Therapist," May 15, 1900, and "Brit. Med. Jour.," March 17, 1900 ; [2] quoted in "Pract.," Nov. 1899 ; [3] quoted in "Lancet," Oct. 14, 1899 ; [4] "Brit. Med. Jour.," Oct. 8, 1898 ; [5] "Cent. für Gynäkologie," 1899, No. 41 ; [6] "Phil. Med. Jour.," Dec. 9, 1898 ; [7] "Therap. Gaz.," Sept. 15, 1899 ; [8] "Presse Méd.," Dec. 24, 1898 ; [9] "Riforma Medica," March 16, 1899 : [10] quoted in "Brit. Med. Jour.," Jan. 23, 1899.

J. W. Thomson Walker, M.B., F.R.C.S.

Gonorrhœal Conjunctivitis.—Almkvist[1] applied a 2 per cent. solution of **Largin** four times on the first day, and ½ per cent. solution three times daily afterwards. Three cases in which the lachrymal canal had been invaded yielded at once to the treatment.

REFERENCE.—[1] "Arch. f. Dermatol. u. Syphil.," B. 1, 1899.

CORYZA. *W. Milligan, M.D.*

S. S. Bishop[1] recommends the employment in cases of acute coryza of tablets containing **Morphine**, gr. $\frac{1}{12}$, **Atropine**, gr. $\frac{1}{600}$, and **Caffeine**, gr. $\frac{1}{6}$.

In acute coryza Theisen,[2] after cleansing the nasal passages with a warm alkaline antiseptic solution, orders the employment of a snuff made up as follows :—

R Sod. Bicarb.	āā gr. xv	Amyli	grs. v
Sod. Bibor.		Acaciæ	ʒj
		Nosophen	q.s. ad ʒj

REFERENCES.—[1] "Laryngoscope," Oct., 1898 ; [2] Ibid., March, 1899.

Prof. H. P. Loomis, M.D., New York.

Millener[1] refers to the effect of **Supra-renal Extract** in producing anæmia of mucous surfaces. In consequence of this it may be applied in the form of an aqueous solution (20 grains of dried extract in ½ an ounce of water filtered through cotton) to the congested nasal mucous membrane in coryza. The nose and naso-pharynx should first be cleansed with an alkaline wash of sodium salicylate, sodium bicarbonate, and boracic acid. The solution is applied on pledgets of cotton. The author hopes it will take the place of the dangerous drug cocaine in the relief of congested mucous membranes, and he notes that in some operations of the nose it may be employed to prevent hæmorrhage.

Diaphoretic Powder for Colds[2] :—

R Powdered Camphor	grn. $\frac{8}{10}$–1½	Potassium Acetate	grns. 3–4½
Powdered Opium	grn. ⅓–½	Sugar	grns. 150

To form one powder, which is put into a cup of tea and taken at bedtime.

REFERENCES.—[1] "Buff. Med. Jour.," lv, p. 585, 1900 ; "Brit. Med. Jour.," April 21, 1900 ; [2] "Gaz. deg. Osped. e del. Clin."

CRAW-CRAW. *James Cantlie, M.B., F.R.C.S.*

Dr. T. Emily,[1] a member of the Marchand Mission, writing from Fashoda, Soudan, states that craw-craw is a distinct morbid entity. Commencing usually in the lower extremities, but also in the hands or elsewhere as a small reddish brown macula associated with intense itching, an ulcer develops with perpendicular sides and a granulating surface. The thick pus which exudes hardens and scabs. The disease is highly contagious and by some has been considered to be due to gonococcal infection. Dr. Emily does not consider that the disease is carried by insects.

As regards treatment Dr. Emily recommends that the ulcerated surface is first rendered aseptic by washing and scraping : **Boric**

Acid is then thickly dusted upon the ulcer, the surface covered by sterilised gauze on which boricated vaseline is spread, and the whole enveloped in cotton wool and tightly bandaged. The dressing is allowed to remain for five or six days, when the ulcerated surface will be found to have healed.

REFERENCES.—[1] "Jour. Trop. Med.," March, 1899; trans. from the "Arch. de med. Nuvale," Jan., 1899.

CYSTITIS.

Synopsis.—(Vol. 1900, p. 97). **Pyoktanin Solution** applied locally, the pain following the application being best met by **Codeine**, gr. j doses.

CYSTOCELE. (See "Vagina.")

DELIRIUM TREMENS.

Synopsis.—(Vol. 1900, p. 149). **Hot Air Bath** with **Hot Shower** and free **Rubbing**, or **Hot Water Bath** with **Massage**; **Isolation**; Catharsis with **Calomel** and **Salines**, then hot and light food every four or five hours; no narcotics. Tonics and stimulants only after delirium passes, and sleep and exhaustion set in; then **Strychnine Nitrate**, in $\frac{1}{60}$ gr. doses four times daily, or infusion of **Cinchona**, ʒj, every four hours. **Ipecacuanha** is the best diaphoretic next to baths; avoid mechanical restraint if possible. Touvime used **Atropia Sulphate**, gr. $\frac{1}{60}$ subcutaneously with good result. Letullé advises **Cold Baths** at 72° Fah. for high fever (105° Fah.) lasting from ten to fifteen minutes every two or three hours.

DERMATITIS MEDICAMENTOSA. *T. Colcott Fox, M.B.*

Prof. Neumann[1] relates the case of a patient suffering from Bright's disease and hemiplegia in whom small doses of **Potassium Iodide** soon excited a pustular and bullous eruption of the face, and after death a huge ulcer of the pylorus was found and ascribed to the drug.

Milian[2] gave 6 grammes of potassium iodide daily to an alcoholic woman and excited, whenever the drug was given, a purpura of the mouth.

REFERENCES.—[1] "Arch. f. Derm. u. Syph.," vol. xlviii, 1899, p. 323; [2] "La Presse Méd.," p. 193, 1899.

DIABETES INSIPIDUS. *Prof. R. Saundby, M.D., LL.D., F.R.C.P.*

Simple polyuria sometimes occurs in persons who belong to diabetic families, and must then be regarded as a nearly allied neurosis. Sometimes a case which begins with simple polyuria becomes saccharine, and at other times a saccharine diabetic may cease to excrete sugar while the quantity of urine remains more than normal. Polyuria is often associated with hysteria, and according to Robinski[1] it may be the only symptom of the hysterical diathesis. It is well known that in true diabetes insipidus there is a great increase of the urea excreted, but Ehrard[2] has pointed out that in hysterical polyuria

while the chlorides are increased the urea is not in excess, and in fact, is usually diminished.

REFERENCES.—[1] "Progrès Med.," Feb. 18, 1899; [2] Ibid., Feb. 18, 1899.

DIABETES MELLITUS. (See also "Glycosuria.")

Prof. R. Saundby, M.D., LL.D., F.R.C.P.

During the International Medical Congress at Paris a discussion[1] took place upon diabetes in which Pavy maintained that the cause of the hyperglycæmia must exist between the seat of absorption in the intestine and the hepatic vein. According to him carbo-hydrates are normally either transformed into fat, built up into albuminoids, or converted into glycogen, but if these changes do not occur the sugar passes as such into the blood and is excreted by the kidneys. This is true of what is called alimentary glycosuria, but in the more complex and graver forms of diabetes sugar is formed by the breaking up of the tissue albumen, and it is in these cases that besides sugar, oxybutyric and diacetic acids are found in the urine. Lancereaux attributed all cases of diabetes to organic or functional diseases of the pancreas, while Lépine recognised that other organs besides the pancreas may be at fault, and attributed the chief pathogenic action to a diminution of the glycolytic power of the blood. Bouchard tried to reconcile the opinions of Lancereaux and Lépine by suggesting that this glycolytic substance is derived from the pancreas. Charrin regarded insufficient glycolysis as being due to the general diminution of the activity of the processes of oxidation, and maintained that such a condition was generally present in pregnancy. He had found that animals subjected during several months to injections of an acid solution consumed less sugar than those in which injections of an alkaline solution had been used. Rappin drew attention to the experiments of Fortineau that the different bacteria normally inhabiting the intestine, such as the bacillus coli, the bacillus mesentericus vulgatus, etc., in some cases produce sugar, and in others destroy it. Mossé said he had observed that certain diabetics could take for a time varying from fifteen days to a month, daily doses of 1500 grammes (3 lbs.) of potatoes as a substitute for bread with benefit, and Desgrez thought that perhaps these results were due to the carbo-hydrates contained in potato being eliminated with the fæces. Brocard thought the improvement observed to follow the prolonged use of potato was explained by the fact that this vegetable is richer than bread in cellulose and in water. Terrier[2] drew attention to the frequency with which alimentary glycosuria occurs in nursing infants attacked by gastro-enteritis, and attributed this to insufficient action of

the liver. Leclerc [3] has met with cases of glycosuria associated with Raynaud's disease. He attributed both conditions to a lesion of the medulla. Nobécourt [4] has found that rickety children are predisposed to alimentary glycosuria. Le Gendre [5] has recorded a case of diabetes mellitus in an infant, aged twenty-two months. The child came of a neurotic and gouty family, and had previously had influenza with double otitis. In spite of treatment it died comatose a few weeks after coming under treatment.

Saundby [6] has summarised the position of our knowledge respecting the pathology of diabetes in the article "Glycosuria" (*q.v.*).

Teusch [7] has introduced a new test for sugar by means of nitro-propiol tablets. The directions are to dissolve 1 tablet in about 3 drachms of water, and 10 drops of the suspected urine, and boil slowly for from three to five minutes. If sugar is present a fine coloration of indigo blue takes place, the indigo being deposited when the fluid is allowed to stand. Saundby [8] found that this test failed to give a positive reaction with urine which had contained sugar for a long time, and gave evidence of the presence of 0·8 per cent. with Fehling's solution. In another case, which gave negative results when examined by fermentation and with phenyl hydrazin, and which, after repeated filtering through animal charcoal, did not reduce Fehling's solution, a positive result was obtained with a nitro-propiol tablet. Saundby therefore concludes that nitro-propiol does not possess any advantage either in its rapidity of application, delicacy, or accuracy over Fehling's solution.

Various clinical trials that have been made with pancreatic preparations in the treatment of diabetes have been very disappointing, but Masuyama and Schild [9] have found that freshly scraped pancreas is of great value in reducing the amount of fat lost in the fæces, the proportion of fat absorbed increasing considerably. Liver substance has been employed in the treatment of diabetes as a rule without any appreciable results, but Gilbert [10] has found that while in some cases there is no result, in others sugar has diminished or disappeared, and in others again it has increased. He thinks that these results depend upon the deficient pathogenetic conditions present, and that good results are only likely to follow the use of liver substance in diabetes when the disease depends upon functional insufficiency of the liver.

Cases of diabetic coma successfully treated by saline transfusions and subcutaneous injections have been reported by Oliver,[11] and Roget and Balvay,[12] and the reporter has had a similar case successfully treated by copious enemata of bicarbonate of soda with strychnine injections.

Guiranna [13] recommends an exclusive diet of fresh vegetables in the treatment of diabetes, by the use of endive, cabbage, French beans, artichokes, and in general all green vegetables. Williamson,[14] while admitting the difficulty of being quite certain that the diminution of sugar excretion is actually due to medicinal treatment, is inclined to believe that in three cases of mild diabetes in old people the sugar excretion was favourably influenced by the administration of **Sodium Salicylate** to the amount of 80 or 100 grains daily, as upon this treatment they were able to take as much white bread as they wanted.

Saundby gives the following hints on diet. A diet giving 2,450 heat units, and containing not more than 500 grains of sugar-forming carbo-hydrates, is as follows: 6 ounces cooked meat, 2 ounces fat bacon, 2 eggs, 2 ounces cream, 3 ounces butter, 3 ounces cheese, 6 ounces green vegetables, 9 ounces Callard's brown loaf, biscuits, and sponge cakes, ½ pint bouillon, 1 pint tea, ½ pint claret, 2 ounces Scotch whiskey. On this diet, in addition to the 500 grains of sugar derived from the sugar-forming carbo-hydrates, the patient's tissues receive a certain amount from the decomposition of albumen roughly calculated as twice the quantity of urea excreted, so that if the patient is excreting 600 grains of urea we allow 1,200 grains of sugar from the albumen of his food which, with 500 from the carbo-hydrates, make 1,700 grains. How much of this is consumed in the body may be determined by estimating the quantity of sugar excreted in twenty four hours and subtracting it from the above amount. For example, a patient aged forty-two, weighing 126 lbs., required a diet containing 2,205 heat units, and was actually allowed one containing 2,450 heat units. His normal consumption of sugar was about 5,000 grains. Upon the above diet, which contained not more than 500 grains of carbo-hydrate, he excreted 134 grains of sugar and 792 grains of urea daily. He, therefore, consumed 1,950 grains ($500 + (792 \times 2) = 2,084 - 134 = 1,950$), or about two-fifths of the normal amount.

It is desirable to continue the use of strict diet for some days or weeks in order that the tissues may regain part of their lost sugar-consuming power, and the duration of this regimen must depend upon the condition of the patient. If the sugar disappears completely, or almost completely it need not be long, while if the sugar remains relatively high it must be persevered with for some weeks, unless the patient shows signs of intolerance by loss of weight, the presence of acetone or diacetic acid in the urine, etc.

REFERENCES.—[1] "La Sem. Med.," 1900, No. 38; [2] Ibid., 1900, No. 38, p. 305; [3] Ibid., 1900, No. 38; [4] "La Revue Med.," Feb. 7, 1900; [5] "Amer. Jour. of Med. Sci.," March, 1900; [6] "Practitioner," July,

1900; [7] "Lancet," Feb. 17, 1900; [8] Ibid., March 24, 1900; [9] "Zeitschr f diot. und phys. Therapie," 1899, vol. iii., p. 481; [10] "La Sem. Med.," 1900. No. 37, p. 302; [11] "Lancet," Aug. 2, 1900; [12] "Lyon Med.," Jan. 8, 1899; [13] "La Clinica Medica An.," 5, No. 19; [14] "Practitioner," July, 1900; "Lancet," May 19, 1900.

DIARRHŒA AND INDIGESTION IN CHILDREN.

Henry Dwight Chapin, M.D., New York.

Dr. Heubner[1] states that **Lavage** of the stomach has been discredited from being used in improper cases. It is unavailing in chronic gastro-intestinal lesions with athrepsia and in cases where acute dyspepsia begins, not by gastric disturbance, but by intestinal troubles, such as colic, abdominal distension and green stools. Gastric lavage is equally inefficacious in children who exhibit signs of an inflammatory condition of the small or large intestine. The reverse is true, however, when we have to deal with an artificially fed infant who has been suddenly seized with vomiting, anorexia, and the symptoms of collapse resulting from acute indigestion. As, in such a case, gastric torpidity frequently exists, impeding the passage of the accumulated stomach contents into the duodenum, the intestine is in a way protected, at least for a few hours, from the infection of the decomposing food, and emptying the stomach by means of the sound, followed by lavage, procures an immediate cure and prevents secondary intestinal disturbance from being set up. Neither purgatives, which favour the entrance of decomposing matter into the intestines, nor emetics, can be substituted. A small-sized œsophageal tube, furnished with a funnel, is used. Two precautions are indispensable: One must use a physiological solution of sodium chloride or a solution of sodium bicarbonate, 7 per cent., previously warmed, and never employ plain water, which has a detrimental effect on the delicate gastric epithelium. The column of water should not exceed 20 cm. in height.

Dr. W. E. Fothergill[2] uses **Salol** and **Petroleum** in infantile diarrhœa. In thirty five cases salol was used. Two children died; six did not recover until other drugs were used, while the remaining twenty-seven cases recovered rapidly and completely under the influence of salol alone. An emulsion containing 33·3 per cent. of petroleum was given in thirty-two cases. One child died, two recovered slowly after the exhibition of other drugs, and the remaining twenty-nine cases ended quickly and favourably on petroleum alone.

Drs. Thiercelin and Chevrey[3] employ injections of **Beer Yeast** in infants with gastro-enteritis. After giving aperients, the intestinal canal is thoroughly washed out. A teaspoonful of dry yeast, or a dessertspoonful of fresh yeast, is dissolved in tepid water, previously boiled, and thrown

up the rectum by an ordinary ball-enema syringe. The nates must be held together for a few minutes lest the enema be rejected. The yeast is thus administered two or three times daily, the intestinal tract always being washed out first, and the patient kept on a water diet.

Dr. Koplik[4] deprecates treating the gastro-intestinal diseases of infants in hospitals as usually constructed. The subject can never be solved except on the colony or cottage or camping system, very much in the same manner that pulmonary cases are treated. He advises a colony of huts, with plenty of air and light, each holding two beds and in bad cases one bed, separated from each other by sufficient ground space arranged on a high tableland, not necessarily near the sea, but on the contrary inland, where the air is not harsh but free from the heat of the city streets ; such small, primitive huts can be taken apart, disinfected and put up anew with each season. They should be arranged over acres of land around a central administration building, in which the physicians and nurses live and in which the food is prepared. The laundry should be built apart from all else. The mothers should live in the huts and conduct themselves much as they would in their homes, taking their infants out into the open if ever so ill. At fixed times they can come to the central station and obtain their food and that of their infants, as at a dispensary. That the gastro-intestinal diseases, both mild and severe, are, in the vast majority of cases, infectious is the keynote of the idea.

Dr. F. M. Crandall[5] considers the administration of **Opium** in the summer diarrhœas of children as follows :—

It is contraindicated (1,) In the first stages of acute diarrhœa, before the intestinal canal has been freed from decomposing matter ; (2,) When the passages are infrequent or of bad odour ; (3,) When there is a high temperature or cerebral symptoms are present ; (4,) When its use is followed by elevation of temperature or the passages become more offensive.

It is indicated (1,) When the passages are very frequent, with pain ; (2,) When the passages are excessively frequent, large, and watery ; (3,) In dysenteric diarrhœa, preceded by castor oil or a saline ; (4,) In late stages, with small, frequent nagging passages ; (5.) When the passages consist largely of undigested food, and the bowels act as soon as food is taken into the stomach.

The dose varies greatly, and it is impossible to lay down positive rules. It should be as small as possible, the object being to check peristalsis and relieve excessive pain. Narcotism should be strictly avoided. Under one year, the dose of opium or its derivatives as compared with other drugs is small.

The preparations most available for young children are **Paregoric** and the **Deodorised Tincture.** Dover's powder is used by some practitioners. Morphine is very rarely required. When given hypodermically to young children, the dose should not be more than $\frac{1}{300}$ grain. The dose of paregoric may be as follows: At three months, ♏ij; one year, ♏viij; five years, ♏xxx. The dose of the deodorised tincture may be at three months, ♏$\frac{1}{2}$; one year, ♏$\frac{1}{3}$; five years, ♏ij. The dose of Dover's powder may be at three months, $\frac{1}{12}$ grain; at one year, $\frac{1}{3}$ grain; at five years, ij grains. It should be remembered that these liquid preparations are tinctures, and the doses, therefore, if measured in drops, should be twice those here given. These doses are but approximate, and it may be necessary to diminish or increase them for different individuals.

REFERENCES.—[1] "La Sem. Méd.," Jan. 17, 1900; [2] "Brit. Med. Jour.," Feb. 24, 1900; [3] "Gaz. des Hôp.," Jan. 9, 1900; [4] "Arch. Ped.," May, 1900; [5] "Inter. Med. Mag.," July, 1900.

DIGESTIVE SYSTEM (Disorders of).

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With our rapidly advancing knowledge of the pathology of the numerous diseases which produce the various forms of indigestion, it is much more difficult now than formerly to discuss them satisfactorily from the clinical side without regard to the underlying conditions. Yet, besides the functional derangements of secretion, there still exists the large and dimly illumined subject of nervous dyspepsia, concerning which we know little beyond its symptomatology and the results of methods of treatment somewhat empirically followed. And in the region of the intestines pathologic exactness is not yet attainable, concerning a large class of affections, including especially the nervous disturbances of peristalsis as well as those of the pancreatic, hepatic and intestinal secretions which are rarely fatal.

In the treatment of most forms of indigestion the diet is of paramount importance. The comparative digestibility of the various aliments under different conditions needs to be studied with even more zeal than the action of drugs upon the digestive processes; and both these subjects have claimed recently a large share of attention from investigators.

The Diet in Amylaceous Dyspepsia.—Alfred W. Perry,[1] of San Francisco, under the head of "Studies on the Digestion of Breads," has shed important light upon the causation of that most frequent form of indigestion in which the starch, failing to be promptly converted into dextrin and maltose, undergoes fermentation. His investigations indirectly help us also to prevent and cure the same affection.

Perry states with substantial correctness that 92 per cent. of the starch in our food is, under the best conditions, converted into dextrin and maltose during mastication and the period of about thirty minutes in the stomach before the HCl secretion is strong enough to stop it; but "if very much less than this is so changed, the subjects suffer from pressure, acidity, heartburn, and other common symptoms which are often hardly noticed for a considerable time." The quantity of saliva mixed with the starchy food during mastication determines the amount of starch digested in the mouth and stomach, and supposing the person not to have the bad habit of taking frequent drinks of some beverage to moisten the food he is chewing, the dryer a morsel of bread or other amylaceous article of diet is, the more saliva will be required to pulpify it sufficiently to be swallowed, and thus the greater the proportion of its contained starch that will be digested before the full secretion of HCl in the stomach puts an end to the amylolytic process. But Perry found that besides the degree of dryness the porosity of a bread increases the quantity of saliva absorbed by it during mastication.

Digestibility of the Different Breads, etc.—Obviously the softer or more soggy a sample of bread or rolls is, the less saliva it is possible to get into it, and starchy foods so prepared as to be full of fat, such as pastries, fried bread, fried potatoes, etc., must be almost impermeable to the saliva. There must be great differences, then, in the digestibility of the different kinds of bread, biscuits, etc. Perry's numerous experiments demonstrate that the percentage of water contained in these is in an inverse proportion to the percentage of their contained starch digested in the mouth and stomach.

The following table shows the amount of starch conversion during chewing and thirty minutes' digestion afterward at 100° F. :—

PARTS.	KIND OF BREAD.	STARCH CONTAINED.	PER CENT. OF STARCH CONTAINED CONVERTED TO MALTOSE AND DEXTRIN.
100	French Bread	43·0	89
100	Stale Milk Bread ..	40·0	84
100	Fresh Milk Bread ..	30·4	65
100	Soda Crackers	63·0	72
100	Dry Toast, Bakers' .	54·0	95
100	Soft Rolls..	28 0	62
100	Hard Rolls	44·0	90
100	Pie-Crust	42·5	52
100	Army Crackers	64·0	53

Further experiments by Perry confirmed those reported by Walsh and Waldo[2] to the British Medical Association in 1894, and show the falsity of the prevalent impression that the indigestibility of hot or fresh bread is due to the presence in it of living yeast fungi or other micro-organisms capable of causing fermentation. Even freshly baked breads were found not to contain any such micro-organisms, none of these concerned in fermentation being capable of withstanding the degree of heat (163° F.) found in the centre of loaves during the baking. The real and only cause, then, of the indigestibility of fresh bread is its large content of water and deficient absorbability of saliva. Hence the first steps in the cure of amylaceous dyspepsia is to prohibit, not all starchy food, which would seriously impair nutrition, since fully three-fifths of the total nutriment of man should consist of carbo-hydrates (that is starch and sugar, and starch is generally less likely to disagree than sugar), but to forbid all preparations of starch which are not dry and porous enough to admit of a large absorption of, and admixture with, saliva during the act of mastication. The next step is to see to it that the patient thoroughly chews and insalivates such forms of food instead of taking most of his starch in some soft mushy form, even then helping it down with frequent draughts of liquid because too indolent to masticate enough to provoke a sufficient flow of saliva.

Further Suggestions as to Hygienic Eating.—Sir T. Lauder Brunton[3] in considering the treatment of dyspepsia, recently emphasised as strongly as possible the importance of eating slowly, as well as complete mastication and insalivation of not only the starchy foods but also meats, since unless the latter are finely comminuted by the teeth, the gastric juice cannot act upon all the particles until after long delay. Patients who cannot otherwise form the habit of thoroughly insalivating their food, should, according to Brunton, follow Sir A. Clarke's rule and count the bites. For every mouthful of meat they must allow thirty-two bites, or one for every tooth, and for extra tough meat sixty-four bites. He further advises that solids and liquids should be taken separately—the latter at the end of the meal or between meals. The foregoing rules are sufficient to cure many cases of dyspepsia without other help; but when they are insufficient, let the patient take his farinaceous and proteid foods at different meals. That is, he is to take bread and butter or other carbo-hydrates at breakfast, but no fish, eggs, nor meat with these. Then at luncheon let him have fish, eggs, or meat, but no farinaceous articles whatever. Then at five o'clock another farinaceous meal, as at breakfast, and at eight a proteid meal again. Such a method of feeding should *a priori* be efficacious, since these different kinds of aliment require very different lengths of time

to digest and pass out of the stomach ; and when carbo-hydrates, which should be fully digested within two hours, must wait five or six hours for their accompanying proteids to digest, the probability of their undergoing fermentation in the stomach would seem to be greatly increased. Brunton further recommends the drinking of hot water upon arising, upon retiring, and at other times during the day, when the stomach should be empty or may need such help to empty itself. He would also prescribe acid and pepsin in weak stomachs after meals, and often a little alkali just before meals to stimulate the secretion of the gastric juice.

The Influence of certain Beverages and Drugs upon Digestion.— Among the most important of recent experiments concerning the digestibility of various substances, when combined with certain beverages or drugs, are those described below :—

Beddies and Fischer[4] tested both in the tube with artificial digestive solutions, and in the human stomach, the time required for the solution of macerated hard-boiled eggs and other forms of albuminous food when mixed with tea, coffee, port wine, and various drugs. The results agree in showing that strong infusions of both tea and coffee greatly prolong the time required for the digestion of albumen. In the tube with artificial digestive solutions this was nearly doubled in the presence of such infusions. In the stomach eggs could digest in one and a half hours when taken with bouillon or with water simply, one hour and threequarters with coffee, and two hours with tea. The person employed for the experiment had normal digestion. With another person, an alcoholic patient having a deficiency of HCl, the results showed a slightly better digestion of ordinary vegetable albumen with the addition of 50 c.c. (about a wineglass full) of port wine. With this person 30 grammes of milk albumen (plasmon) did not digest quite so well mixed with wine as with water : 30 grammes respectively of vegetable albumen were left in this same person's stomach for two hours mixed with moderate medicinal doses of different drugs including guaiacol, tincture of opium and quinine, as well as once with simple water as a control. The results showed that with both forms of albumen the amount left undigested at the end of two hours was markedly less when nothing but water was taken with the food. In the case of the vegetable albumen, the undigested residue in the experiment with plain water was 37 per cent., with quinine 46·5 per cent., with guaiacol 63 per cent., and with opium 70 per cent.

Riegel,[5] by numerous experiments on dogs, has proved that morphine administered at the same time with food primarily lessens

somewhat the secretion of the gastric juice, but later exerts a decidedly stimulant effect upon the same secretion which increases with the size of the dose, and with ascending doses is more and more lasting. This is a most important observation, since morphine is often given to relieve the pain of gastric ulcer when the HCl is nearly always excessive, and when, therefore, any drug tending to increase that secretion is contra-indicated.

That there is scarcely an active drug in our materia medica which, when administered in the usual manner by the mouth, does not decidedly affect the gastric functions in one way or the other, either exciting or depressing them, with the possible result in either case of ultimate injury to them, is not sufficiently understood or considered by many physicians.

The Effect of Atropine and Pilocarpine upon the Secretion of the Gastric Juice.—Arthus Schiff,[6] of Vienna, in the course of an elaborate series of experiments carried out in the clinic of the University of Vienna, confirmed the fact established by Riegel through eighty experiments on men, as well as by numerous others, that atropine greatly lowers the percentage of HCl secreted by the stomach: but, on the other hand, proved by fourteen separate experiments on eight persons that the secretion of pepsin is very much less affected than the HCl by atropine. In several instances in which the HCl secretion was reduced to less than half, and sometimes to less than one-fourth the proportion previously found, the amount of digestion accomplished was virtually unchanged. In ten of the fourteen experiments the pepsin production was unchanged in spite of the fact that the HCl was markedly lowered. This was possibly because in these cases the proportion of HCl was previously excessive, a condition which we now know impairs rather than improves the digestive process; but Schiff's results would warrant the inference that either the pepsin secretion was less lowered than that of HCl, or that with a sufficient quantity of HCl present a moderate amount of pepsin may prove about as effective as a larger amount.

Schiff further experimented by giving pilocarpine hypodermically at the same time with test meals, and the results, though somewhat contradictory, agreed in the main with those of Riegel in showing an increased secretion of gastric juice which was weaker in HCl, but with unimpaired digestive power. Atropine and pilocarpine, therefore, do not display in their effects on gastric secretion that antagonism which they do in respect to other important functions.

L. v. Aldor[7] instituted experiments upon six patients to test Riegel's results from the subcutaneous injection of atropine simultaneously with

the giving of test breakfasts. Aldor found a pronounced diminution not only of the HCl, but also of the pepsin, which, however, lessened with the continued administration of the atropine, and finally did not occur at all. The stomach glands seemed to become accustomed to the medication after a time, and ceased responding to it. A serious result of these injections was the lowering of the motor power of the stomach, which of itself would contra-indicate the prolonged administration of atropine in hyperchlorhydria.

Potassium iodide (0·5 to 1·5 grammes) given with the test breakfast produced no effect upon the gastric secretion. Under the influence, however, of 60 grammes of sugar (dextrose) in solution there was a striking falling off in the percentage of free HCl and total acidity as well as of the pepton production. In hyperchlorhydria, then, not complicated with much fermentation, sugar should be a valuable remedy. But, unfortunately, in excessive HCl there is usually also excessive fermentation.

The Diet in Dyspepsias from HCl Excess.—During the past year there has been a much more general recognition than before of the great prominence and importance among dyspeptic conditions of the painful digestion and associated dyscrasia which result from an excess of HCl in the gastric juice. Numerous papers have discussed the remedies and special kinds of diet found most efficient in controlling such excess.

Formerly the few authors who pretended to any knowledge of hyperchlorhydria or hydrochloric hyperacidity, assumed as a matter almost of course, that the diet in this affection must be largely nitrogenous, since experiments had demonstrated that the diastatic or starch-digesting ferment of the saliva would not act in a decidedly acid medium, and that, therefore, the conversion of starch into dextrin is soon stopped entirely in all stomachs in which the HCl secretion is very excessive. A large number of recent authors, however, including Hemmeter,[8] have recorded observations and experiments showing that proteids, especially meats, while they neutralise more of the HCl, also stimulate its excessive secretion still more, so that a cure of the disease is difficult to effect when such foods predominate in the diet; also that starch taken early in a meal is more or less changed by the ptyalin of the saliva in the presence of even HCl excess, and that with the help of full doses of alkalies, such as 1 or 2 teaspoonfuls of **Sodium Bicarbonate**, the excess of acid could be so far controlled that the patient could be allowed the usual proportion of starchy food safely, especially if it were very thoroughly cooked and subjected when practicable to an extra-baking process in addition, so as to effect by

heat a partial dextrinisation of the starch; particularly if, besides, it were masticated and insalivated as completely as possible, and some diastase were administered with or before meals.

This view has been more and more accepted of late. The observations of the writer upon many cases of painful digestion due to excessive secretion of HCl which have been reported in various papers during the past five years, confirm the view that a predominant proteid diet—especially meat—tends to aggravate and prolong such forms of acid dyspepsia, while starch may safely be given if thoroughly masticated and well insalivated with the other precautions above mentioned.

Dyspepsia—painful or difficult digestion—with the exception of the amylaceous form, results most frequently from either an abnormally large or small gastric secretion, or from deficient motor power in the stomach walls—delayed emptying of the organ—very rarely from hypermotility. The influence of the various food preparations and of remedies upon these functions becomes, therefore, of vital importance in treating such a symptom.

The Value of Fatty Foods in Relieving Acid Dyspepsia.—Wirschubski[9] undertook to confirm the experiments previously made in Pawlow's laboratory, showing that fatty foods restrain gastric secretion and thus tend to relieve hyperchlorhydria. He found that the simultaneous ingestion of albumen and fat, as in fat meat, resulted in: (1,) A stage of diminished secretion; (2,) Followed about seven hours later by a suddenly increased secretion. When, instead of fat meat, milk and the yolk of eggs were substituted, this secondary stimulation from the albuminous portion of the food appeared sooner. By feeding with carbo-hydrates and fats, such as bread and butter, Wirschubski could entirely prevent the period of increased secretion. Therefore he advises that in cases of dyspepsia dependent on excessive secretion of HCl the diet should consist mainly of fat and cereal foods. Lean meat should then be avoided.

That fat lessens the secretion of the gastric juice has been proved by a number of recent investigators; and a majority of the latter would seem to agree now that albumen, especially in the form of meat, tends more than other foods to increase the action of the gastric glands. However, one recent observer has reached a different result, and his observations are summarised below:—

The Comparative Effects on Secretion of Mixed, Vegetable, and Meat Diets.—Meyer,[10] of Berlin, at the suggestion of Boas, experimented upon himself and two female servants. Tests of their stomach contents were made five times during a preliminary period of fourteen days while they were on an ordinary mixed diet; then five times again

in fifteen days, during which they were on a diet of meat mainly. The result was a slightly higher average acidity while limited to vegetables, though on the so-called meat diet the acidity averaged a little higher than during the preliminary period of the usual mixed diet. The two women experimented upon both began to menstruate while on the vegetable diet, and this invalidates the results observed in them, since menstruation often increases the gastric secretion; and for other reasons that need not be entered upon here, Meyer's findings are open to question, especially since they are in opposition to the results of most other recent observers.

Various Remedies for Gastric Pain and Hyper-excitability.—W. G Morgan,[11] of Washington, has made numerous experiments upon both a healthy person and one who suffered severely from the gastric pain and nervous symptoms which result from a great excess of HCl in the gastric juice, to determine especially the effects of a liberal addition of sugar to the diet. His paper was entitled "Sugar as Such in the Dietary of Dyspeptics." The experiments were conducted with care and precision and, though they need confirmation by trials in a much larger number of cases to be conclusive, the results strongly suggest the probability that large quantities of sugar taken with each meal, such as 12 to 24 grammes, besides a saucerful of maple syrup in addition to the usual diet, have a very positive restraining influence upon the secretion of HCl and may thus actually relieve the gastric pain of hyperchlorhydria. The percentage of HCl was reduced from one-half to one-third of that secreted before, and the total acidity was lessened in about the same proportion. It is noteworthy, however, that intestinal flatulency and reflex disturbance of the heart were more complained of than before.

Rosenbach[12] reports that in irritated states of the stomach, with pyloric spasm, especially when associated with exaggerated intestinal peristalsis and diarrhœa, he has had very satisfactory results from the following prescription :—

℞ Chloral Hydrate grns. 15 | Water grns. 75
M.

From 12 to 24 drops to be taken thrice daily, after meals, in half a tumblerful of water.

These small doses exercise a marked effect upon palpitations of dyspeptic origin, flatulence, and oppression.

In irritative dyspepsia, when the pain amounts to gastralgia, the "Riforma Medica" of March 18, 1900, recommends the following :—

℞ Chloral Hydrat. grns. 3 | Peppermint Water 60 drops
Sodium Hyposulph. grns. 6 |
M.

To be taken at once and repeated cautiously, if necessary.

For the acid dyspepsia resulting from hyperchlorhydria Olivette [13] reports well of Fleiner's treatment with large doses of **Bismuth**, which has proved so brilliantly successful in gastric ulcer, when assisted by rest and a milk diet. He gives 2½ drachms of bismuth subnitrate through a tube every morning for two or three weeks. Great relief of the pain, discomfort, and vomiting, is thus produced.

Gaston Lyon, whose directions for treating hyperchlorhydria are summarised in the same journal, insists on abstinence from tobacco and the disuse of aperients, though in fact sodium sulphate and Carlsbad water or Carlsbad salt tend to lessen the excessive acid secretion. He advises also against undue mental exertion and over-eating. In severe forms he requires rest in bed, a strict diet of milk and lime water, and finds help from cold compresses to the stomach.

For the same hyper-acid condition Boas [14] has advised the following which, however, could be effective in mild cases only :—

℞ Sulphate of Sodium	grns. 450	Carbonate of Sodium,	grns. 375
Sulphate of Potassium	,, 75	Biborate of Sodium	,, 150
Chlorate of Sodium	,, 450		

M.

A spoonful in hot water to be taken in the morning.

Another recent contribution of value to the therapeutics of irritative dyspepsia is the prescription of **Linseed Oil** to overcome pyloric spasm and relieve gastric pain arising therefrom. P. Cohnhein [15] relates the case of a man with dilatation of the stomach in attendance upon Boas' clinic, who cured himself and kept comparatively well by the ingestion of linseed oil, a liqueur glassful night and morning. He had well-marked gastrectasis following an injury to the abdomen, and there was believed to be pyloric stenosis due to cicatricial contractions of some traumatic lesion. He had formerly suffered from pain and vomiting, which were much relieved by lavage, but the regular use of the oil had so far cured him at the end of five weeks, that he had no further vomiting or digestive discomfort, and has since not needed to take the oil except after imprudence in diet.

Elting [16] reported some time ago a case of severe gastric pain recurring daily for three or four weeks, and persisting each time until the stomach emptied itself of much greenish fluid which did not seem to contain food. There was neither free HCl nor lactic acid in the vomitus, and its very low total acidity of thirteen showed that it was not gastric juice, though traces of pepsin and rennin were present, but that it was an abnormal hyper-secretion. These attacks recurred at intervals of two to six weeks, and were cured finally by tonics and lavage with a 1 in 100 nitrate of silver solution.

Martin[17] has reported a case in which more or less persistent vomiting and intense pain referred to the region of the stomach was found to be caused by a cyst of the pancreas. The tumour could be felt as a large mass in the left upper quadrant of the abdomen. The urine was at first albuminous and contained tube casts, but never any sugar. The leucocyte count was normal. Removal of the cyst was followed by complete recovery. An almost identical case was reported by Israel.[18]

Intragastric Electric Treatment for the Cure of various Abnormal Gastric Conditions.—Boardman Reed[19] continues to report good results with **Electricity** applied directly to the inner surface of the stomach by means of his improved intragastric electrode in various conditions of both atonic and irritative dyspepsia. In excessive secretion of HCl with or without resulting pain after meals, and often secondary atony and dilatation, he uses the high-tension faradic coil with the best success.

For other forms of gastralgia and obscure gastric pain of unknown origin, he employs **Galvanism** within the stomach, applying in this way 5 to 10 ma. for five minutes after the patient has taken one to two glasses of water. Reed refers to Dr. Charles G. Stockton, of Buffalo, as the first in America to use direct electrisation of the stomach, though Ewald, in Germany, had previously employed it. Stockton has reported good results from it in cases of weakened or apparently absent motility, in gastric dilatation, catarrh, atrophy, and in some in which the HCl existed in excess.

Dyspepsias in which there is a Deficiency of Pepsin.—The reaction from the earlier view that pepsin is usually deficient in dyspepsia has probably carried the profession too far in the other direction, so that for some time past there has been a prevalent idea that there is nearly always a sufficient proportion of pepsin even when the gastric juice is demonstrably inactive, and that it is then only necessary to administer HCl to mend matters.

Roth,[20] in a series of observations made at the Augusta Hospital, Berlin, estimated the proportion of pepsin secretion in numerous cases by determining the proportion of certain fixed quantities of coagulated albumen which had been digested during ten hours in an incubator with the same amount of the stomach contents under like conditions otherwise. He found the fluctuations were very marked and by no means always in accord with those of the HCl secretion.

The Classification of Dyspepsias according to the Secretion.—Gilbert and Chassevant,[21] as a result of their investigations, made the following

classification of the different conditions found in the stomach as to the relative secretion of HCl and pepsin :—

Hyperchlorhydria with hyperpepsia—*i.e.*, both HCl and pepsin in excess.
,, with a normal amount of pepsin.
,, with a lessened amount of pepsin.
Normal HCl secretion with an increased amount of pepsin.
,, ,, ,, with a normal amount of pepsin.
,, ,, ,, with a lessened amount of pepsin.
Lessened HCl secretion, with an increased amount of pepsin.
,, ,, ,, with a normal amount of pepsin.
,, ,, ,, with a lessened amount of pepsin.

There should be added to the above the condition in which there is an absence of both HCl and pepsin—achlorhydria and apepsia—sometimes called achylia gastrica.

The Treatment of the Atonic Forms of Dyspepsia.—Formerly indigestion was generally supposed to be nearly always atonic—due to a lack of pepsin and HCl or of motor power in the stomach—and even to-day most of the ready-made preparations for it sent out by manufacturing pharmacists, as well as the quack nostrums which are guaranteed to cure all cases, are composed mainly of stimulants, or even gastric irritants, and digestive ferments. But the recent awakening to the now well attested fact that the majority of the cases of indigestion are of the contrary kind and characterised by the presence of an excessively strong gastric juice, has evoked a preponderance of contributions in medical literature concerning the irritative forms. Still, in general neurasthenia and other conditions of lowered nutrition, as well as in most advanced cases of organic disease in all parts of the body, as in well-marked pulmonary phthisis, chronic nephritis, chronic gastric catarrh, etc., the form of dyspepsia encountered is most frequently atonic, though by no means even here universally so, since, for example, an acid type of chronic gastric catarrh is quite prevalent.

Pickardt[22] has laid down some rules for the efficacious use of the vegetable ferment **Papain.** It acts in an alkaline medium and will then actively digest albumen. It is necessary, therefore, to give either with or after it a sufficient quantity of alkali to insure the neutralisation of any free acids in the stomach. It is best given during a meal in doses of 0·15 to 0·25 gramme for light meals, and 0·3 to 0·5 gramme for heavier ones. From the conditions as above stated by Pickardt it is evident that papain and its preparations (including the special derivatives of the plant sold under the names of Papoid, Caroid, etc.), are most useful in those forms of indigestion in which either HCl or

pepsin is very deficient or absent, and, *a fortiori*, of course when both principal elements of the gastric juice are wanting. Preparations from this plant would be manifestly inefficacious in the acid forms of dyspepsia.

Many observers continue to report favourably of **Orexin Tannate** in anorexia with lessened gastric juice, especially in cases in which these symptoms occur in phthisis. But some have found that it frequently disappoints in the very kind of cases for which it is most vaunted, while in other cases apparently exactly similar it succeeds brilliantly. It is a safe remedy and one worth trying in an extremity.

Gilbert [23] reported a case of chronic dyspepsia evidently atonic, with excessive fermentation, in which preparations of **Hydrogen Dioxide** were freely used, both locally on the gums and internally. There resulted a gratifying cure at the end of two weeks. The trouble may have been caused by the swallowing of bacteria from diseased gums, or teeth, for which such a remedy locally should be safe and effective. Given internally in doses of a teaspoonful, though well diluted, it will sometimes produce nausea.

Latkowski [24] determined by experiments on both sick and healthy persons the effect of **Marienbad Water** on the stomach. His conclusions were as follows : (1,) The water stimulates the gastric mucous membranes ; (2,) It increases the motor power of the stomach ; (3,) It increases the amount of both free and combined HCl ; (4,) It does not hinder the action of the gastric and pancreatic ferments ; (5,) It is indicated whenever the secretion or motor power of the stomach requires stimulation, or in cases in which there is excessive gastric fermentation. It is contra-indicated in hydrochloric hyperacidity due to ulcer or otherwise, in acid gastric catarrh, and in all forms of hypersecretion.

Simon [25] experimented on eighteen persons with **Sodium Sulphate,** and the results were as follows : Sodium sulphate in doses of 0·5 to 10 grammes in 200 c.c. of warm water before breakfast, taken regularly for two to three weeks, has a curative influence on asthenic gastric catarrh ; but this is only slight in other cases such as atrophic gastritis, the anacidity of tuberculosis, dilated stomach, hyperacidity and nervous affections without local involvement of the stomach. Such doses are said to increase the HCl in the gastric juice and increase peristaltic action, but the experience of others would indicate that in the larger range of doses mentioned, sodium sulphate may sometimes lessen the secretion of HCl.

Boardman Reed,[26] in discussing the "Treatment of Chronic Asthenic Gastritis—Ordinary Chronic Catarrh," advises against too

sweeping restrictions in the diet, though all very irritating or fermentable articles should be interdicted. He advocates nourishing "as fully as possible without risking excessive fermentation and without irritating or over-burdening the digestive organs, bearing in mind that at the best much of the food is lost through the fermentative and putrefactive processes in these cases." He emphasises particularly the hygienic requirements, generally such as an abundance of pure, out-door air and sunshine with moderate exercise in the open air, and the avoidance, when possible, of fatiguing indoor occupations. He recommends lavage and massage, and as a preliminary to the former, drinking a pint or more of warm water followed by vigorous contractions of the diaphragm and abdominal muscles with the patient in different postures—lying supine and prone, and in the knee-chest position. This he has found to assist greatly in detaching the mucus from the walls of the stomach, and it thereby shortens the time during which the tube must remain in the stomach in order thoroughly to cleanse the latter. In the cases with good motor power, especially when it is inconvenient to use the tube, he advises drinking freely of hot water an hour before meals as a substitute for lavage. As to medicines he finds HCl and pepsin helpful in most cases in moderate or large doses. These, besides their aid as digestants, improve the appetite, and, as insisted by the writer in previous communications, exert a restorative influence upon the gastric glands.

Hydrotherapy in Stomach Diseases.—George D. Kahlo,[27] of Indianapolis, Ind., points out the indications for the employment of water internally, externally, and by lavage. Drinking water in the fasting state cleanses the gastric mucous membranes and stimulates both secretion and peristalsis. It is best taken hot in chronic gastritis with a weak motor function. Drinking large quantities of water can only aggravate dilatation or muscular atony of the stomach. In suitable cases the most favourable results are obtained by slowly sipping the water as hot as it can be borne, 8 to 16 ounces an hour before each meal and at bedtime. Cold water is the more stimulating to the gastric secretion and is a better laxative. Hot water increases the biliary flow more and is an active diaphoretic. Small quantities of cold water may be useful in myasthenia and diminished secretion. The mineral waters, if strong, act like their contained minerals ; otherwise much the same as pure water, but through the mental impression produced by them, they are often taken more regularly. Carbonated waters in small quantity relieve nausea, stimulate the gastric mucous membrane, improve the appetite and increase the urinary flow. Freely used they are likely to cause distension and eructations. Alkaline

waters in small quantities increase the gastric secretion, and in large, depress it. The natural lithia waters are useful as eliminating agents —better than the artificial ones—in spite of the smallness of their content of lithia.

Lavage is useful, especially for the very class of cases in which the drinking of large quantities of water would do much harm—that is, in atony or dilatation of the stomach with stagnation and retention of the food. It has also been proved very helpful in the treatment of chronic gastritis. Plain warm water may be used, but various medicinal solutions are occasionally substituted. The addition of a little table salt is of advantage when there is much mucus with diminished gastric juice, but sodium bicarbonate is preferable in cases with excessive HCl. The gastric douche requiring the use of a tube with numerous fine openings at the lower end, and the atomiser by means of which the interior of the stomach can be sprayed with astringent or antiseptic solutions, may be still more effective in certain classes of cases, especially in chronic gastritis.

Externally he commends the abdominal coil, or a modification of it known as the Winternitz method. Cold applications are antiphlogistic and sedative when prolonged, being useful in acute gastritis and to control vomiting or hæmatemesis. Hot applications suit best in gastralgia, hyperæsthesia, gastric ulcer and chronic gastritis. In neurotic conditions the alternate spraying of hot and cold water over the abdomen (Scottish douche) is claimed to be efficient. The shower and plunge baths employed for their tonic constitutional effect may also benefit local conditions in the stomach.

The Treatment of Nervous Dyspepsia.—In this disease the general nervous system is more at fault than any part of the gastro-intestinal tract, though often some unrecognised local affection, especially in the intestines, is the cause. Grace P. Murray[28] recommends nerve sedatives, especially **Sodium Bromide**, and insists that when this has no beneficial effect, anæmia is present. Nux vomica or other bitter tonic in the liquid form should be associated with the bromide. She gives also carminatives for the flatulency and feeling of exhaustion. When there is hyperacidity, she administers alkalies, preferably sodium bicarbonate, which may be combined with bismuth. Acids may help when oxaluria or liver disturbances co-exist.

Boardman Reed[29] classes under nervous dyspepsia the apparently causeless gastric symptoms which cannot be traced to any lesion and are not even associated with any constant functional disturbance. For example, cases of hyperchlorhydria he would not admit to such a class since here there is a definite and constant involvement of certain

structures in the same manner, while in true nervous dyspepsia the secretion may one day be excessive, and the next deficient. In the way of treatment he advises chiefly measures and remedies that strengthen the nervous system especially; at first rest and generous feeding with massage, electricity, etc., and later exercise out of doors. As to medicines, he prescribes some one or more of these: **Iron, Arsenic, Gold,** and the **Hypophosphites** or **Glycerophosphates.** In short, the treatment recommended is that found most efficient in well-marked neurasthenia.

Intestinal Indigestion.—W. H. Porter,[2] of New York, discusses this subject elaborately. Gaseous distension in the bowels with or without pain, coming on several hours after eating, is usually a result of intestinal indigestion. The liver, over-taxed in destroying the toxins produced in the intestines, becomes impaired in time, the skin having then a muddy tint and the sclera and conjunctivæ a yellowish tinge. The urine is likely to be scanty, high coloured, and very acid, while indican is generally present in excess. This indicanuria with uricacidæmia he considers as proof positive of intestinal indigestion. There results also either constipation or diarrhœa, and many troublesome as well as often serious nervous symptoms. The hyperacid urine produces irritation of the genito-urinary tract with a hyperæsthetic condition of the nerves distributed to it.

Porter insists also that all the non-parasitic skin affections are in large measure, not independent diseases, but only the results of intestinal indigestion. Concerning treatment he emphasises strongly the importance of studying the diet of each case individually with the utmost care, and basing it upon the results of frequent analyses of the urine as to urea, uric acid, indican, etc. While a mixed diet is best for the nutrition when it is well borne, severe restrictions must often be enforced in this disease. In some cases even plain milk is too rich, and to avoid the cream skimmed milk must be ordered, or to get rid of the sugar koumiss, zoolak or kefyr must be substituted. It is not always safe to regard the patient's fancies respecting foods, and with the most severely restricted diet it is sometimes advisable to administer small quantities of alcohol for a time. On account of their larger content of nucleo-albumens some vegetables should be allowed as soon as they can be digested without much flatulence, and until then a concentrated preparation of the nucleo-albumens should be administered three times a day. Eggs, beef-steak, stale bread and butter and toast should form the staples of the diet as soon as practicable.

This paper having been devoted mainly to the etiology and dietetics of intestinal indigestion, the writer does not fully discuss the medicinal

treatment. However, he suggests the administration of a little **Dilute HCl** and **Pepsin** (intending this advice, it must be supposed, for those cases only in which the gastric juice is deficient in those ingredients), and recommends the administration also of a few grains of dried **Ox Gall** and **Pancreatic Extract** three times a day just before eating. He approves further of giving some one of the intestinal antiseptics such as **Charcoal, Resorcin, Salicylic Acid**, etc., also **Tannalbin** for its effect in precipitating the accumulation of mucus, and when the liver flags, a mercurial. A laxative, if required, and **Caffeine** with **Strychnine** as nerve tonics, complete the therapeutic suggestions.

Symptoms of Gastric Indigestion due to Intestinal Disease.—K. Faber[31] calls attention to the frequency of symptoms referred to the stomach, and strongly suggestive of gastric disease, which yet depend entirely upon affections of the intestines. For instance, in four carefully studied cases of tapeworm the gastric secretion was found normal in two and excessive in two, the hyperchlorhydria in one of the latter disappearing promptly after expulsion of the worm. In other cases of intestinal troubles various gastric symptoms such as nausea, vomiting, oppression, cardialgia, eructations, etc., occur. Even when decided abnormalities of the gastric secretions are found the real cause may be proved to exist in the intestines, the cure of which removes all the dyspeptic symptoms and abnormal conditions. Among the most common of such dyspepsias from bowel troubles are a result of neglected constipation, and secondary irritation or inflammation of the colon. Strong laxatives are injurious in such cases. Only castor oil and daily small doses of the saline are to be permitted. The main dependence should be upon diet. Vegetable food in finely divided form as in purée, stewed fruit, rye bread, coarse wheaten breads, oatmeal, etc., are especially recommended.

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Nos. 13-15, 1899; [25] "Zeit. f. klin. Med.," vol. xxv., Nos. 3-4; [26] "Inter. Med. Mag," Nov., 1899; [27] "Braith. Retr.," June, 1899; [28] "Merck's Arch. of Mat. Med.," Feb., 1899; [29] "Int. Med. Mag.," Jan., 1900; [30] "Phil. Med. Jour.," May 12, 19, and 26, 1900; [31] "Ugeskrift for. Läger," Nos. 14-15.

DIPHTHERIA. *Henry Dwight Chapin, M.D., New York.*

Dr. Grigorieff' has made bacteriological examinations of the throat and nose in forty-six diphtheria convalescents. Cultures were taken when the false membrane disappeared, and repeated throughout convalescence until several successive examinations proved the absence of diphtheria bacilli. In thirty-six cases the cultures were negative within one week after the exudate had gone from the throat. Five cases still had the bacilli in the second week; and in five they persisted until the end of the third week. The organisms disappeared from the nose about as quickly as they did from the throat. It is evident that cultures should be taken and examined before diphtheria patients are released from isolation, especially in children old enough to attend school.

Drs. Garratt and Washbourn[2] advise a systematic bacteriological examination of the fauces in scarlet fever as a means of preventing post-scarlatinal diphtheria. From studies at the London Fever Hospital, they conclude that post-scarlatinal diphtheria is due to the introduction of unrecognised cases of diphtheria into the scarlet fever wards, and that this can only be obviated by systematic bacteriological examinations of all cases on admission, and by separation of those in whose throats diphtheria bacilli are found. Some supervision of cases of rhinitis with diphtheria bacilli in the nose should be practised, such as keeping them in bed while the discharge continues.

Dr. E. S. Yonge[3] discusses the relationship of membranous inflammation of the nose to diphtheria, and concludes as probable:—

(1,) That membranous rhinitis (this term being understood not to include primary nasal diphtheria) is commoner than is usually supposed, cases being overlooked owing to the mild constitutional symptoms, or regarded as catarrhal rhinitis, etc.

(2,) That the disease may occur in one or two forms, which concur in the local appearances, the prolonged course and the mildness or absence of constitutional symptoms, but differ in the presence or absence of the Klebs-Löffler bacillus and in their power of infection.

(3,) That the form associated with the Klebs-Löffler bacillus is considerably more common than the simple form and is a mild local manifestation of diphtheria, differing sharply, however, from the usual form of primary nasal diphtheria.

(4,) That, inasmuch as the two forms of membranous rhinitis are clinically indistinguishable, a bacteriological examination should be practised in every case, and isolation of the patient carried out, at least until the result of the examination is made known.

There has been some renewal of the discussion of the efficacy of **Antitoxin** during the past year, several writers taking ground in opposition to this remedy. Thus, Dr. A. Rupp[4] considers the subject of diphtheria deaths and antitoxin statistics. In studying the published statistics of Monté and Kretz, the writer proves to his satisfaction that conclusions regarding the efficacy of antitoxin cannot be drawn therefrom.

Dr. J. E. Herman[5] has made a statistical study of the antitoxin treatment of diphtheria, and, in view of the fact that in late years there has been a decline in the death rate of other infectious diseases than diphtheria, against which no new remedy has been directed, announces the failure of antitoxin in the treatment of diphtheria.

Dr. William P. Munn[6] reaches different conclusions :—

The results of the antitoxin treatment in Denver, Col., during the four years 1895 to 1899, are given. The pre-antitoxin period 1889 to 1894, inclusive, gave two thousand two hundred and seventy-two cases with eight hundred and twenty-seven deaths, or a mortality of 36·4 per cent. During the four succeeding years there were one thousand, one hundred and seventy-seven cases with one hundred and thirty-six deaths, a mortality of 11·56 per cent. He further divides the antitoxin period by giving cases treated with and without antitoxin, with the results of six hundred and seven cases treated and thirty deaths, a mortality of 4·96 per cent. against five hundred and seventy cases untreated and one hundred and six deaths, or 18·6 per cent. or four times as many died when antitoxin was omitted from the treatment as when it was used.

To sum up the above, in the past four years Denver had almost half as many cases of diphtheria as it had during six preceding years, with but one-sixth as many deaths from the disease.

Dr. F. Villy[7] gives his views upon the present aspect of the antitoxin treatment.

The author gives the results as obtained from the annual reports of the Metropolitan Fever Hospitals. During the years 1888 to 1894 there were eleven thousand five hundred and ninety-eight cases of diphtheria treated, with a mortality of 30·3 per cent. During 1895 to 1898, twenty thousand three hundred and eighty-two cases were admitted with a mortality of 18·4 per cent. The increase in the number of cases is probably due to the introduction of bacteriological diagnosis.

Not only has the case mortality in post-scarlatinal diphtheria decreased, but the total mortality as well. Among laryngeal cases and after tracheotomy in post-scarlatinal diphtheria the mortality has fallen from 23·3 per cent. in 1896 to 6·1 per cent. in 1898.

A dosage of 2,000 units is sufficient for an ordinary mild case on the first day, but when seen later, or when it is progressing rapidly, a larger amount is needed. In severe cases from 8,000 to 12,000 units are given when the patient is first seen, followed by another 2,000 to 8,000 units every twelve hours, for the next twenty-four or forty-eight hours or longer, according to the gravity of the case. A total amount of 20,000 units is not uncommon.

The antitoxin should be used as early as possible and in sufficient amount to produce a distinct reaction in twelve hours; if such reaction be not apparent, a second or third dose must be given, till the effect is observed.

Suppression of urine is almost unknown. Albuminuria of a mild and transient nature appears in a few cases, from 0·5 to 1·5 per cent., about the time of the appearance of the antitoxin rashes, but is of no serious consequence. Paralysis generally follows the more severe cases.

Dr. A. F. Turner[8] gives the diphtheria mortality of the three principal Australian colonies for the past fifteen years, which shows a very marked lessening of the death rate since antitoxin has been introduced.

Dr. B. R. Shurley[9] gives a study of the results of antitoxin treatment in laryngeal diphtheria and the benefits of intubation, reaching the following conclusions:—

(1.) Administer antitoxin early without waiting for a bacteriological diagnosis.

(2,) Tonsillar exudate attended by a croupy cough or partial aphonia is an indication for a full dose of 1,500 to 2,000 units of antitoxin.

(3,) Antitoxin administered twelve hours or more prior to operative interference will reduce the mortality of intubated cases at least 50 per cent.

(4,) Immunise all exposed children of croup age.

(5,) Continuous steam inhalations are of great value in all cases.

(6,) Early operation is most strongly advocated.

Dr. W. B. Pusey[10] gives a report of two hundred and seventy-six intubations.

Of the whole number of cases one hundred and thirty-four, or 48·5 per cent. recovered.

In the last seventy cases in this report antitoxin was, with few exceptions, given. The greater number of them were seen only when the relief for laryngeal stenosis was imperative. In some the antitoxin had already been given, but had apparently had no effect in staying the progress of the trouble. In others, whose condition demanded immediate relief, the antitoxin was given after the insertion of the tube, and in these cases the tube was removed on the third or fifth day, whereas without the antitoxin it would have remained in from five to eight days.

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DIPHTHERITIC PARALYSIS.

Synopsis.—(Vol. 1900, p. 171). Attend to **Diet**; **Champagne** or **Shaved Ice** for vomiting, or **Galvanic Current**, positive pole, to nape of neck, and negative over stomach, using 8 to 10 milliampères. As tonics **Kola, Cocoa**, the **Glycero-phosphates, Phosphide of Arsenic** and **Strychnia. Salt Baths, Stimulating Irrigations** and **Massage**.

DISLOCATIONS.

Priestley Leech, M.D., F.R.C.S.

Bennett,[1] in advising **Massage** in dislocations, says the following elementary points must be insisted on: If the dislocation be complete the capsule of the joint must be torn, the rent in the capsule being of large or small extent; the obstacles to reduction depend comparatively little, as a rule, upon the situation or character of the laceration in the capsule, occasionally only do some of the difficulties of reduction lie with this structure; the real difficulty is, as a rule, due to muscular contraction, and if the dislocation remains unreduced, physiological shortening of the muscles takes place. For practical purposes the capsule and surrounding bony points may be ignored as obstacles to reduction. Ignore the torn capsule and concentrate attention upon measures for the avoidance of adhesions and muscle waste. The only way of avoiding muscle waste in cases of dislocation, especially of the shoulder is by massage commencing immediately after the reduction of the displacement, smooth rubbing only for the first two days, after which passive movement follows the massage. The passive movement may be free in all directions save that which is in the direction of the muscles which tend to waste. For example, in the case of the shoulder, abduction of the arm from the trunk should not be practised for a week or ten days after the injury because the

strong action of the adductors, unopposed for the time being by the weakened deltoid, tends to displace the head of the humerus inwards. Recurrent dislocations will be found to be associated with marked muscle waste ; hence the cardinal principle in their treatment is to remove the atrophy of the muscles by massage and methodical exercises with or without electricity, and not by shortening a lax capsule by operation. The same treatment is useful in sprains and wrenches, and in sprain of the knee the patella should be passively moved to prevent its adhesion to the femur.

REFERENCE.—[1] "Lancet," June 9, 1900, p. 1641.

DYSENTERY. *James Cantlie, M.B., F.R.C.S.*

Dr. A. McKenzie,[1] from a study of the disease in Natal, arranges the lines of treatment under three headings : (1,) That by **Ipecacuanha ;** (2,) That by some form of **Castor Oil Emulsion** ; (3.) That by **Sulphate of Magnesium** or some similar saline, *e.g.*, Glauber salts. Ipecacuanha, in Dr. McKenzie's experience, has proved disappointing, owing to the difficulty of retaining the drug, even after adopting the usual preliminary precautions of abstention from food and administration of opium. Ipecacuanha no doubt seems to do good in many instances ; but it is mostly in cases that would probably get well with mere rest and diet. In severe cases ipecacuanha frequently fails, and the vomiting and weakness caused by continuing the treatment is calculated to lessen the patient's chances of recovery. Treatment by castor oil succeeds best after a mild dose of 3 or 4 grains of calomel. The prescription Dr. McKenzie recommends is :—

℞	Ol. Ricini	♏ lxxx	Glycerini	♏ xlviij
	Liq. Sodæ	♏ ij	Mucilage	q.s
	Sod. Salicyl.	grs. v	Aq. Menth. Pip.	ad ℥ss

Sig.—℥ij every hour or ℥jss every two hours.

If there is much pain and straining 1 or 2 minims of tinct. opii may be given with each dose. The bowel may be freely washed out by a copious injection of sterilised boracic acid lotion three or four times a day. Treatment by salines is administered by the following mixture :—

℞	Mag. Sulph.	℥j	Hydrarg. Perchl.	gr. $\frac{1}{80}$
	Quin. Sulph.	gr. iss	Glycerini	℥jss
	Acid. Sulph. Aromat.	♏ viij	Inf. Quassiæ	ad ℥ss

Sig.—Give a tablespoonful every hour.

The medicine is continued until the slime, blood and straining give way to pale, rice-watery looking motions without straining. This usually occurs in eight to twelve hours.

At first by this treatment the frequency of the motions are not diminished, but after twenty-four or forty-eight hours the motions become yellow, when the medicine is to be given less often. After three days the motions usually occur every three hours. Dr. McKenzie prefers the saline treatment to any other.

Dr. A. B. Dalgetty[2] describes certain bodies met with in microscopic examination of dysenteric stools. The objects seen were: (1,) Bacillus subtilis spores, jointed threads, each segment containing a spore; (2,) Fatty-looking cells; (3,) Vegetable tissue; (4,) Crystals of ammon., magnes., phosphate; (5,) Jet black particles with sharp angles; (6,) Bacterium coli commune; (7,) Rapidly moving (vibratory) bacteria; (8,) Yeast cells; (9,) Rapidly moving cocci; (10,) Starch grains; (11,) Salivary gland-like cells; (12,) Leyden's crystals; (13.) Hair. This table is useful to those studying dysentery, as it is a catalogue of the objects seen by one individual, and it can be confirmed, added to, or eliminated by others.

Dr. G. A. Huntley[3] defines dysentery as a disease of the large intestines attended by inflammation of the solitary glands and follicles, and characterised by frequent stools containing blood and mucus, and accompanied by tormina and tenesmus. He arranges dysentery under three clinical forms: (1,) Acute catarrhal dysentery; (2,) Acute tropical dysentery; and (3,) Acute diphtheritic dysentery. Dr. Huntley advocates what he terms the rational treatment, namely, that of **Purgatives** which should be combined with **Salol**. When blood and mucus do not disappear by this treatment ipecacuanha should be tried in either 30 or 40-grain doses, or ¼-grain every half hour.

W. J. Buchanan,[4] I.M.S., draws attention to the prevalence of rheumatism with dysentery. He describes a case in which rheumatic-like inflammation of both knee-joints appeared on the third day of a dysentery attack when the dysentery suddenly ceased in such a manner as to attract attention. Buchanan mentions Brault's description of this complication in his article in "Maladies des Pays Chauds" and refers to Sydenham's mention of rheumatic complications in dysentery. The question, however, is: Was the dysentery the primary ailment, or was the intestinal flux merely a complication of pyæmia?

W. J. Buchanan[5] reports "five cases of terminal dysentery," and states "that the occurrence of dysentery as a terminal symptom of many diseases of the tropics is a fact." K. Macleod mentions dysentery as "a precursor of death in Leper and Lunatic Asylums in India, and Dr. Sandwith, of Cairo, has observed it in the last stages of cases of pellagra in Egypt." Buchanan goes on to state that "just as people

in Europe, "die at their lungs," so in the tropics people "die at their bowels.'"

All the cases mentioned by Buchanan occurred amongst prisoners in a Bengal jail.

Sir Wm. Macgregor[6] asserts that dysentery was unknown in British New Guinea half a score of years ago, but with the advent of Europeans to the Pacific Archipelago, dysentery appeared and caused great mortality. He is of opinion that dysentery causes more deaths than any other disease in tropical countries. He also adds: "there can hardly be any doubt as to the contagious nature of some epidemics of dysentery. The common house fly is a possible agent in the spread of dysentery."

Professor Flexner[7] whilst investigating the diseases of the American soldiers in the Philippines, stated that he succeeded in isolating a group of organisms having certain resemblances with the "coli" group, which bore important relations to the disease in point of agglutination, distribution and pathogenicity. The same organism had been isolated from cases of acute dysentery in Japan and Puerto Rico.

REFERENCES.—[1] "Journ. Trop. Med.," Aug., 1899; [2] Ibid., Oct., 1900; [3] Ibid., June, 1900, reprint from "Amer. Bapt. Mission Union"; [4] Ibid., Nov., 1900; [5] Ibid., March, 1900; [6] "Brit. Med. Assoc.," Oct. 6, 1900; [7] Ibid., Sept. 29, 1900.

DYSMENORRŒA. (See "Menstruation.")

EAR (Diseases of). *J. Dundas Grant, M.A., M.D., F.R.C.S.*

EXTERNAL EAR AND MEATUS.

Auricle.

Roller[1] considers that *hæmatoma* of the auricle in the insane is not due to violence, but occurs spontaneously. He obtained a similar condition in rabbits by section of the restiform bodies. He advises no active treatment unless perichondritis is present.

Dundas Grant[2] describes a case of removal of an *epithelioma* from the auricle without recurrence. A wedge-shaped section including the ulcer was excised, and the edges were united without producing any noticeable disfigurement.

External Meatus.

Hartmann[3] considers that in most cases of so-called congenital *atresia of the external meatus* operation is contraindicated, because in so many cases the tympanic structures are absent or in a very rudimentary condition. He is in favour of operating in acquired atresia after all inflammation has ceased.

Furunculosis of the External Meatus.—Lamann[4] recommends that after the meatus is syringed out with weak antiseptic solution, the meatus should be plugged with a tampon of cotton-wool, which should reach the drum ; the tampon should be dipped in the following ointment :—

℞ Oxide of Zinc	40 parts	White Vaseline	300 parts
Carbolic Acid	6 parts		

(The author attributes the good result to the pressure of the tampon, but the ointment may well be credited with a share.—D. G.)

Bar[5] points out that care is required to differentiate anterior abscesses of the mastoid and furunculosis of the meatus, as does also Weissman.[6]

Theobald[7] maintains that by the insufflation of boric acid and oxide of zinc a certain cure of otomycosis can be assured.

Malignant Disease.—Galbraith Connell[8] records a case in which a small growth of eight weeks' duration, in a girl six years of age, was removed, but quickly recurred, with persistent severe pain, and seven days later facial paralysis ; it then appeared as a greyish-looking mass occupying the external meatus, painful to the touch, and adherent to the posterior wall. It was curetted away, the tympanic membrane was found destroyed, and the bone on the inner wall of the tympanum denuded of periosteum. For a month she had relief from pain, slept well, and put on flesh, but recurrence took place, involving the mastoid region and the tissues in front of the ear, death occurring within six months. The growth was, on section, found to be a spindle-celled sarcoma. The prominent symptoms are pain, rapid recurrence, involvement of glands and nerves. Excessive pain should always excite suspicion of malignant mischief, and lead to a microscopical examination of the tissue.

A case of sarcoma occurred at the same hospital three years previously, but in this case the sarcomatous mass originated in the middle ear ; there was no external growth, and the symptoms pointed to intracranial extension, suggestive of temporo-sphenoidal abscess.

An *Exostosis* of remarkable size (15 mm. long, 12 mm. broad), was shown by Rutten.[9] It was removed under an anæsthetic by a gouge without detaching the auricle, with the result of curing the otorrhœa and restoring the hearing.

Membrana Tympani.

Chronic Dry Myringitis is credited by Stetter[10] with being a factor in the production of obstructive deafness. The characteristic appearance is indistinctness of outline of the malleus from thickening of

the external layers of the membrane. He recommends the following drops :—

℞ Sozoiodolic Acid 5 parts | Ol. Ricini 200 parts
Absolute Alcohol 20 parts |

Sig.—Ear-drops in blue glass phial, to be used twice a day.

Massage by Haug's or Breitung's apparatus is also recommended.

(We should be disposed to attribute the increasing deafness to chronic changes in the middle ear, with which the myringitis is the less important accompaniment.—D. G.)

Treatment of Perforations of the Membrana Tympani.—Several observers advocate the use of **Trichloracetic Acid** applied to the edges of the perforations, as described in last year's "Medical Annual."

Intratympanic Operations.

Ossiculectomy.—Lake[11] gives an analysis of fifty cases of chronic otitis media in which he has performed complete ossiculectomy. In almost every case the discharge was cured, and in many the hearing was improved.

Dundas Grant[12] shows that diminished bone conduction is not always a contra-indication to ossiculectomy, but agrees with Politzer that the hearing of the whispered voice at more than a metre is a strong contra-indication to the operation.

Prof. Politzer[13] analysed the various conditions under which **Removal of the Stapes** was likely to be of use. He disapproved of the operation in sclerosis or non-suppurative disease of the middle ear; considers it very risky in active suppuration of the middle ear, and approves of it when suppuration has ceased and there are adhesions between the stapes and the niche of the fenestra ovalis.

Faraci[14] urges the possibility of **Re-opening the Fenestra Ovalis** in cases of ankylosis of the stapedio-vestibular articulation, on the strength of experiments on animals, and also on one living patient. The reports of further observations will be interesting.

Diseases of the Middle Ear.

Chronic Catarrh of the Middle Ear.—Snow[15] urges a less pessimistic prognosis in cases of this kind, and maintains that by long-continued treatment and a thorough attention to all pathological conditions in the nose and its adjuncts, a complete or partial cure can be obtained in cases apparently hopeless.

(Each of his cases presented well-marked pathological conditions within the nose. In the most hopeless cases these are conspicuous by their absence.—D. G.)

Massage of the tympanic membrane and the ossicles by means of inflation by Politzer's method, an air-pump through the external meatus or an instrument through the external meatus, is advocated by Ostman,[16] Pynchon,[17] and Nuvoli.[18] It is indicated in chronic deafness resulting from chronic dry middle-ear catarrh, all pathological changes in the throat, nose, and tubes having been removed as far as possible, also acute middle-ear catarrh which resists ordinary treatment. It is contra-indicated in all acute inflammatory conditions and in all diseases of the sound-perceiving apparatus with normal conducting media. (When, however, there is associated inner-ear disease, the method should be tentatively employed.—D. G.) It is probably of little use in cases of extreme retraction of the ossicles, simple cases of middle-ear catarrh, extreme atrophy of the membrane, or adhesions of the same. (This need not prevent the use of a suction apparatus with a view of rupturing or stretching adhesive bands.—D. G.)

Politzer, among others, attaches considerable value to rarefaction and massage practised through the meatus in suitable cases.

Nuvoli has tested the electromotor ear pump on the normal cadaver, and seen the vibrations communicated to all the parts forming the middle and internal ear. (On the whole this method of treatment has taken an important place in aural therapeutics, though its scope requires further definition.—D. G.)

Prof. Lucae adheres to the opinion that more good can be effected by means of **Pressure with a Probe** on the malleus through the meatus, employing for the purpose an improved form of his well-known spring-pressure probe, by which the degree of force exerted is tempered by the tension of a spiral spring.

Dundas Grant calls attention to the good results obtainable in some cases by means of **Vibration applied to the Spine,** which he considers to be a means of indirect massage of the auditory ossicles.

The technique of tympanic inflation is discussed by Pynchon.[19] He prefers **Politzer's Method:** (1,) In new non-inflammatory conditions when the tube is sufficiently patent; (2,) In the treatment of children; (3,) When nasal deformities render the passage of a catheter difficult. *Catheterisation:* (1,) When Politzer's method is not successfully accomplished; (2,) For purposes of diagnosis; (3,) When it is important that only one ear should be inflated; (4,) When using the continuous air current. The *continuous air current* is preferred: (1,) When tubal catarrh is prominent; (2,) When Politzerisation causes discomfort; (3,) In acute inflammatory conditions.

Scooping out of the Petromastoid Bones is advocated by Malherbe[20]

in dry chronic catarrh of the middle ear, but for the present this plan of treatment is still only on its trial.

Acute Suppuration of the Middle Ear.—Lermoyez[21] speaks of the prophylactic treatment of this disease, and lays great stress on the importance of good nasal respiration. In all cases of acute coryza the nose should be blown gently, and lavage of the nares in all forms must be absolutely avoided. He also[22] maintains that cases of acute inflammation of the middle ear are frequently contagious, just as in pneumonia, citing several cases where husband and wife, or two sisters living together have been successively attacked with acute median otitis of similar type. These cases, he maintains, are too many to be accounted for by mere coincidence.

Larsen[23] had under his care sixty-five previously healthy soldiers suffering from this condition. He treated them in different ways, and found that those cases confined to their rooms and treated with **Dry Sterilised Tampons,** did much better than any others. He advises also early paracentesis. No fœtor occurred except in those cases treated with antiseptic drops.

(This is probably most true of those cases which come at an early stage into skilled hands, if possible before perforation.—D. G.)

Smith[24] advises the use of the artificial leech in front of the tragus in cases treated early. In young children he advises a blister instead of the leech. He advises free purgation and **Atropine, Morphia** and **Quinine** combined; warmth applied to the ear by means of a hot-water bag or by a bag of hot salt, and instillations of hot saturated boric acid. When paracentesis is called for, it should be done thoroughly to prevent the opening from closing, and the lower limit of the incision should reach the floor of the canal to allow of drainage.

Fullerton[25] advises early paracentesis when the intensity of the process is confined to the upper part of the tympanic cavity, the membrana flaccida bulges, and marked hyperæmia spreads upwards towards the segment of Rivini. In other cases he prefers spontaneous perforation.

Chronic Suppuration of the Middle Ear.—Cipriani[26] reported that in ten cases he had had quick relief from a long-continued suppuration by the injection of a 2 per cent. **Formalin Solution** and insufflations of **Eka-Iodoform.**

A 4 per cent. solution of **Formol** is strongly advised by Vacher.[27]

White[28] advises the thorough irrigation through a large perforation with a warm solution of **Silico-Fluoride.** He considers that it is advisable not to leave the treatment to the patient, but that it should be carried out under the care of the medical attendant

Reihn[29] advises that cases which have resisted ordinary treatment for a certain time, should be operated on, and that either ossiculectomy or Stacke's radical operation should be performed.

Pritchard[30] advocates the thorough purification of the ear and the subsequent plugging of the meatus with strips of sterilised iodoform gauze.

Lacroix[31] maintains that in cases of *ozæna* the mucous membrane of the ear may be attacked by a similar process, and that in the resulting otitis the pus has the distinctive odour of ozæna.

Hartmann[32] considers that *otitis (acute and chronic) in infants* may account for loss of weight or cessation of growth, and that when accompanied by severe septic symptoms it may cause diarrhœa, while Green[33] finds that *leucocytosis* is present in about 80 per cent. of all cases of chronic suppuration.

Ménière[34] advises, in cases of attic suppuration, the removal of diseased ossicles, but where this means of treatment is refused by the patient, he resorts to energetic cauterisation of the attic by means of a saturated solution of **Chloride of Zinc.**

Diseases of the Mastoid.

The diagnosis of *empyema of the mastoid* is frequently, in the absence of general and local symptoms, a very difficult one. Cozzolino, in 1894, called the speedy re-appearance of pus in the tympanum the unique symptom in this disease. Barrago-Ciarello[35] confirms this, and points out that in this disease alone the pus flows in a single line over the inner wall of the cavity from the postero-superior to the postero-inferior segment.

Lewis[36] points out how much destruction of the mastoid there may be in cases of mastoiditis without any marked local or general symptoms.

Mastoid Operations.—Skin-grafting in mastoid operation as practised by Ballance,[37] is a notable modification. It consists in the re-opening of the operation-wound at the end of ten days to two or three weeks, and the introduction of a large "Thiersch" graft of skin. The following are the chief details :—

The day before the operation the plug is removed, and the cavity irrigated several times with 1 in 40 carbolic lotion. On the morning of the operation the cavity is washed out three or four times with warm, sterile, normal salt solution. During the operation sterile salt solution is the only fluid used.

The anæsthetic having been given, the original incision is again opened with the handle of a knife, the pinna is turned forward, and

all oozing carefully arrested. The drying of the tympano-antral cavity is best accomplished by little pieces of dry gauze held in fine forceps. Great care must be taken to avoid injuring the very delicate layer of pink tissue which covers the bone.

Large epithelial grafts, as thin as possible, are now cut from the thigh or arm. If possible, a single graft large enough to cover the whole granulating surface should be cut. It is then spread on a microscope section-lifter of large size, and carried on it to the outer or superficial edge of the anterior wall of the bone cavity. The edge of the graft is now coaxed on to this superficial edge, and also above on to the adjoining superficial edge of the roof of the cavity just below the linea temporalis, and held there by a fine silver probe. The section-lifter is gradually withdrawn. Drops of blood and bubbles of air, caught between the graft and the wall, give rise to much trouble, but they can be sucked out by means of a fine pipette introduced beneath the graft, the suction having at the same time the effect of drawing the graft down on to the granulating walls of the cavity and causing it to adhere most perfectly.

As a protective to the grafts, pure gold leaf about $\frac{1}{1000}$ to $\frac{1}{2000}$ of an inch in thickness, is carefully pushed into position, and again all eminences and depressions in the bone must be clearly defined. A narrow strip of dry iodoform gauze is now packed into attic, tympanum, and antrum, and the end brought out through the meatus. The mastoid flap is again completely closed, and the outside dressings applied. A week later the packing is removed. This causes no pain, and leaves the gold leaf lining attic, tympanum, and antrum. The gold leaf may be left undisturbed for three or four days more. It can then be removed with forceps after gentle irrigation, when the irregular grafted cavity comes into view, white in colour. A little dry gauze is packed in against the grafts, and should be changed every two or three days till the healing process is complete.

Tiny, moist pledgets of gauze, and steel probes with pear-shaped heads (6 millimètres and 4 millimètres in diameter) will be found most useful in applying the graft accurately to the raw bone surface. When the grafting is complete, eminences and depressions should be as clear to the eye of the operator as before the operation.

A general account of *Mastoid Operations* was given in the "Medical Annual" for 1899, page 251.

Milligan's[38] observations on *tuberculosis of the ear* are highly interesting in this connection. Among the causes he enumerates hereditary tendency, unhealthy environment, unsuitable feeding,

exposure to infection from tuberculous relatives, tuberculous naso-pharyngeal adenoids. Should the staining and examination of the discharge, as is common, fail to reveal the bacillus, a portion of granulation tissue may give a more positive result, and, this also failing, an experimental inoculation with fragments of tissue, especially when scraped from the deep bone after removal of the inspissated *débris*, often succeeds. Multiple painless perforations of the membrane are suspicious of tubercle, the edges presenting a pale, indolent appearance, and giving issue to a thin ichorous and frequently fœtid discharge. There is early an extensive destruction of bone, the facial nerve being often exposed, with consequent paralysis. Early implication and enlargement of surrounding glands is an important symptom. When there is marked debility and emaciation, advanced facial paralysis and masses of enlarged glands, and where the discharge is abundant, fœtid, and frequently blood-stained, palliative measures, antiseptic treatment, and, if possible, residence at the seaside, are more strongly indicated than operation, but the prognosis is bad. When the general condition is otherwise good, and the tuberculous lesion may be regarded as primary, operation is useful. This consists in free opening of the mastoid cells, the scraping away of all softened and carious bone—repeated if necessary—and encouragement of granulation from the bottom. The prognosis is in these cases more favourable, but, as a rule, 40 to 50 per cent. of all the tuberculous cases succumb in spite of operation.

Prof. Politzer[39] encourages operation on the mastoid, when indicated, in presence of subsequent pulmonary tuberculosis, but deprecates it when pulmonary disease is antecedent.

Wingrave[40] reports a case in which tuberculous otitis—revealed by examination of the discharge—was accompanied by transient optic neuritis.

Cholesteatoma.—Lewis[41] described a case of this disease in a patient aged twenty-five, who had had chronic suppurative otitis for twenty-two years. An operation was performed, and an enormous cholesteamatous mass was found occupying the whole mastoid. The mass had eroded into the middle cerebral fossa and through the wall of the sigmoid fossa. The amount of erosion in this case warns one of some of the dangers of cholesteatoma.

Tilley[42] describes a case of cholesteatoma where the middle ear, tympanum, attic, antrum and mastoid formed one large cavity. He[43] also describes a large cholesteatoma, which he had removed *via* the auditory meatus, which was the cause of a tremendous cough. Since the removal the cough had practically ceased.

Sequelæ of Suppurative Inflammation of the Middle Ear. Statistics collected from Prussian hospitals by Teichmann[44] showed, where the distinction could be drawn, that 24·9 per cent. followed acute, and 71·5 per cent. chronic purulent otitis. (These demonstrate the overwhelming degree of danger of the chronic forms, and the great responsibility attaching to the treatment of the acute in preventing them from lapsing into chronicity.—D. G.) The original causes in almost half the cases were the acute infectious diseases of children. (The teachings of Robert Woods, William Hill, and others, reported in former volumes of the "Medical Annual," in regard to the treatment of the ears during the exanthemata, become all the more important in view of these statistics.—D. G.) The difference in the seriousness of tubercular and scarlatinal suppuration is illustrated by the fact that in the former 13·5 per cent. of operations were fatal, and in the latter only 4·6 per cent.

Ophthalmoscopic Examination in the Diagnosis of Intracranial Complications of Suppurative Otitis.—Gradenigo[45] deplores the want of any pathognomonic sign of intracranial complications of otitis at an early stage. He advocates more frequent resort to ophthalmoscopy.[46] Out of one hundred and seventy-two cases in which the results of ophthalmoscopic examination were reported, papillitis was present in ninety, viz., sixteen out of thirty-nine cases of uncomplicated extra-dural abscess (41 per cent.); thirty-one out of fifty-two of septic sinus thrombosis (59·6 per cent.); eighteen out of thirty-four of cerebral abscess, with or without sinus thrombosis (57·9 per cent.); twelve out of cerebellar abscess, with or without sinus thrombosis (60 per cent.); thirteen out of twenty-seven of lepto-meningitis, with or without sinus thrombosis (48·9 per cent.). Gradenigo holds that the presence of papillitis is a certain indication of intracranial invasion, but, as Waggett[47] says, this opinion is not held in all quarters. It must be allowed to be at least a suspicious sign, and in the diagnosis between otitic intracranial disease and such conditions as typhoid fever, it is strongly in favour of the former, as pointed out by Ballance.[48]

Extra-dural Abscess.—Milligan[49] describes two cases, one following acute, the other chronic suppurative median otitis. In the former there was pain around the ear simulating neuralgia. The membrane was intensely congested, and its features obliterated. Incision evacuated pus, but without relieving the pain. Leiter's cold coil gave no relief. The antrum was then explored, but very little pus was found. An opening was then made into the posterior fossa, and an ounce of pus liberated. Recovery soon followed. In the second case there

was puffiness over the parietal and occipital bones. On incision there was found a large fistula in the posterior part of the mastoid leading to the dura mater, which was covered with granulations. These were scraped away, the part disinfected and dressed, recovery rapidly ensuing. The temperature was in the first one sub-normal, in the second not above 99°.

(Such cases are most dangerous if untreated, but most favourable if operated on without much delay.—D.G.)

Extensive Caries of the Temporal Bone, with Diffuse Suppuration of the Scalp.—Broeckart[50] witnessed in a case of chronic suppuration of the middle ear an effusion of pus below the scalp in its whole extent, requiring several incisions and the removal of carious bone from the *os temporale*. (It is almost unknown for such an extensive area to be undermined.—D. G.)

Retro-pharyngeal Abscess of Auricular Origin.—This unusual form of "Bezold's Mastoiditis" was observed by Urbano Melzi[51] in a young child, the subject of middle-ear suppuration. There were sore throat, snoring, stiffness of the neck, and some sub-maxillary swelling. Next day a retro-pharyngeal abscess was detected and evacuated, there being no evidence of cervical caries. Recovery followed without further operation on the ear. The author was able to find only twenty cases of otitic retro-pharyngeal abscess in the literature of the subject. (In some cases these foci of burrowing pus remain persistent until the mastoid is submitted to operation.—D.G.)

Cases illustrating the intracranial complications of suppurative inflammation of the middle ear have been contributed by de Santi.[52] They include cases of meningo-encephalitis, extra-dural abscess, sinus-pyæmia, temporo-sphenoidal abscess with leptomeningitis, and sinus-pyæmia with cerebellar abscess. The full description of this typical series is to be found in the "Transactions of the Sixth International Congress of Otology." One of the cases is peculiar, inasmuch as the radical mastoid operation had been performed on one side with every sign of success two-and-a-half years previous to the occurrence of the fatal termination, which depended on disease of the opposite (unoperated) ear.

Milligan[53] details the *Modern Treatment* of these complications. In acute cases of mastoid involvement he deprecates the "radical" operation, advocating the "Schwartze" opening of the antrum, but in the chronic the complete "Schwartze-Stacke" radical operation.

Sinus Pyæmia.—Whiting[54] distinguishes three clinical stages. In the first, there is a thrombus parietal or complete: in the second, the

thrombus has undergone disintegration : and, in the third, embolic metastases, chiefly in the lungs, have taken place. In the first stage the condition can only be detected when, during the mastoid operation, the lateral sinus is exposed. In the second, on the other hand, there are evidences of systemic absorption, as shown by the pronounced septic or pyæmic fluctuations of temperature. In the third there are rigors, great fluctuations of temperature, and local manifestations of metastases. The writer holds that no phlebitic clot can be regarded as non-infective, and his treatment is carried out accordingly. When the sinus has been exposed, if there is an incomplete or parietal thrombus, it should be entirely removed, and similarly in the case of a completely obstructing thrombus. When the thrombus is low down, the exposed portion of the sinus may be filled with fluid blood, but if this blood is stripped upwards and backwards by pressure with the finger, there is no rapid re-filling from below. In such a case the writer ties the jugular low down in the neck and close up to the base of the skull, dissecting out the portion thus delimited.

A case of thrombo-phlebitis of the lateral sinus treated by operation without ligature of the internal jugular vein, resulting in recovery, was narrated by Dundas Grant.[55] There was a pyæmic temperature with repeated shiverings: the radical mastoid operation was performed and the lateral sinus slit up (pus and broken-down clot being evacuated) both downwards and backwards till firm, normal-looking clot was met with. The cavity on the left was curetted, disinfected, and lightly plugged. Further operation was postponed only until pyæmic symptoms should appear. These did not present themselves, and the patient made a rapid recovery. The writer considers this an exceptional case, and that the general rule should be to tie and divide the jugular vein so as to wash out the sigmoid sinus and bulb.

Arthur Cheatle brought a similar case before the Otological Society of the United Kingdom.

A new symptom of obstructive thrombosis of the lateral sinus, consisting in the absence of the murmur heard by the stethoscope over the internal jugular vein, either under pressure or apart from it, has been brought forward by Voss.[56]

Cerebral Abscess.—Moure[57] relates a case of cerebral abscess following acute suppurative otitis media. It occurred on the seventh day of the disease, commencing with acute pain, vertigo, and depression. There was no vomiting and no interference with speech, but there were right homonymous hemianopsia and word blindness. A

diagnosis of cerebral abscess having been made, the brain was exposed 3½ centimètres above the auditory canal. The dura mater and pia mater having been reflected, a fine bistoury was thrust a short distance into the brain substance, causing a sharp hæmorrhage which was controlled with a gauze pad. Recurrence of hæmorrhage took place when the pad was removed, and further operation at the time was prevented. The patient did well for a few days, when there was an abundant flow of pus; subsequently a cerebral hernia developed, and later the patient died suddenly owing to the abscess having evacuated itself into the ventricle, into which it had opened by an ulcerative process.

Cerebellar Abscess.—Waggett[58] gives a careful record of a case in which he explored and successfully evacuated the pus with curative result. The onset of pain in the course of chronic suppuration called for the radical mastoid operation, but nineteen days later vertigo with occasional vomiting supervened; the temperature was slightly subnormal, the pulse between 60 and 65. Two days later the symptoms of cerebellar abscess became more marked. On exploration with Horsley's pus-seeker no abscess was detected, and further operation was postponed. Five days later the condition was so threatening that the cerebellum was again explored by means of the forefinger introduced through it in the direction of the internal auditory meatus. Between the tip of the finger and the tentorium Waggett felt a "well-defined elastic body of the consistency of a boiled egg with the shell removed." (Other observers have compared such an abscess to an oyster.—D.G.) The pus-seeker introduced into this evacuated about an ounce-and-a-half of pus. Decalcified bone drainage-tubes were employed. A gush of clear, amber-coloured fluid suggested the rupture of the fourth ventricle. Next day the patient was restless and irritable, and complained of pain down the back. Within two days, however, the condition improved, and gradually convalescence. (The case, interesting in many ways, shows the value of digital investigation when instruments give negative results.—D. G.)

Hansberg describes two cases, in one of which the operation was interrupted by hæmorrhage, but was successfully carried out three days later. In the other, the operation was abandoned on account of dyspnœa. It was renewed two days later: pus was found in the mastoid, but no fistula leading to the posterior fossa. Death followed in twenty minutes with asphyxia. (Dyspnœa is probably a strong indication for haste in continuing the operation, rather than for discontinuing it.—D. G.)

General Diseases, and their relation to Diseases of the Ear.

Acute and Chronic Bright's Disease.—Morf[59] has collected fifty six cases where Bright's disease and aural disease have been associated. He found that in many cases inflammatory or hæmorrhagic conditions were evident, but in many others the proximate cause was probably high arterial tension, œdema, or uræmic poison. (Among the symptoms, vertigo, which is sometimes very marked, is not referred to. The importance of the examination of the urine in obscure aural cases is manifest.—D. G.)

Tabes.—Lerner[60] has examined over fifty cases where aural symptoms have occurred in tabetic subjects: in many he considered that the aural and the tabetic symptoms bore no causal relationship. In others the aural symptoms were a direct consequence of the tabes but histological examination failed in localising the nerve lesion.

Tuberculosis.—Gaudier[61] records a case where, after a radical mastoid operation, the wound made was rapidly filled with an abundant growth, from which a pure culture of Koch's bacillus was obtained. The issue of the case was a fatal one, and the author considers that an exuberant growth of granulations in a mastoid wound should cause one to suspect tuberculosis.

Epilepsy.—Lannois[62] relates one case where, in curing the otorrhœa, he was surprised to find that he had also cured a co-existing epilepsy.

Delusional Insanity.—Culbertson [63] discusses a case in which concussion of the left auditory nerve, from the report of a gun, caused deafness, with partial degeneration of the left auditory nerve, and consequent hallucinations of hearing.

Rheumatism.—Uchermann,[64] at the International Otological Congress, read a paper on the subject of rheumatic diseases of the ear, a subject about which little seems to be known. Various observers consider that there may be chronic rheumatic arthritis in the joints of the ossicles. Moos has observed hyperacusis, followed by impaired hearing and subsequent total deafness, during the convalescence after acute rheumatic fever. In the early stages with the hyperacusis there had been associated general hyperæsthesia. Uchermann considers that many of the cases of serous middle-ear affection may be rheumatic in origin; the acute cases yield to salicylates, while the more chronic cases require general rheumatic treatment.

Headache caused by Aural Disease.—Dundas Grant,[65] at the British Medical Association, drew attention to those cases of diffused pain in the head frequently described as "headache," due to cholesteatoma or old-standing suppurations in the attic, in addition to the headaches

occurring in more acute aural troubles. In the latter cases the aural trouble is not likely to be overlooked ; in the former cases this is very apt to occur.

Diseases of the Labyrinth and Auditory Nerve.

Nerve-deafness from exposure to noises has been studied by Cooseman[66] in the case of workers with the "beetling" machine. He arrives at the conditions that are necessary :—

(1,) That the workmen should be predisposed to affections of the ear by the existence of lesions of the nose or pharynx, or else by inveterate addiction to alcohol or tobacco.

(2,) That the noise should be intermittent.

(3,) That it should be of a comparatively high-pitched tone.

Müller[67] found from the examination of artillerymen that the detonation had a more severe effect on ears in which the membrane was beforehand in a tenser condition than normal. He urges that those having any disease of the ears should avoid or quit the artillery. This is especially applicable to officers, whose length of service generally exceeds greatly that of the men.

McCaw[68] narrates a case of typical bilateral labyrinthine nerve deafness caused by a fall on the back of the head without loss of consciousness. He adopts Kauffmann's explanation that the labyrinthine affection on both sides is due to the sudden pressure brought to bear through the trauma, and the spreading of this to the perilymphatic tracts, thence by means of small consecutive hæmorrhages to the parietes of these tracts.

The desirability of examining *the ears in the diagnosis and treatment of cranial injuries* is emphasised by Bolard.[69] He had found in various cases impacted cerumen, causing deafness and vertigo, fracture of the floor of the meatus causing the hæmorrhage, perforation of the membrane causing deafness, while the tuning-fork showed that the internal was injured. Recovery was observed in four cases of actual fracture of the petrous bone, deafness of course remaining permanently.

Miscellaneous.

The Facial Nerve in Relation to Affections of the Ear.—Grunert[70] gives the various ear conditions causing facial paralysis, as (1,) Inflammatory conditions, both primarily, by hyperæmia of the neurilemma and the pressure of pus on the nerve in a confined space, and secondarily by necrosis, cholesteatoma and granulation. Its occurrence in chronic suppuration strongly suggests tuberculosis; (2,) Tumours,

especially those of a malignant nature ; (3.) Injuries, such as fracture of the base of the skull or operations on the ear.

At the International Otological Congress Joyce[71] read a paper on the topography of the facial nerve in its relation to mastoid operations.

Local Anæsthesia in the Ear.—Gray[72] finds an aqueous solution of cocaine or eucaine very disappointing as an aural anæsthetic ; he approves of the following solution :—

℞ Cocaine Hydrochlor.	5 parts	Aniline Oil	50 parts
Sp. Vini Rect.	50 parts		

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EARACHE IN CHILDREN.

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Dr. T. Halsted[1] states that the large majority of cases of chronic middle-ear disease in adults is traceable to acute otitis media due to adenoids in childhood.

The writer concludes : (1,) Earache in children is generally caused by acute inflammation of the middle ear, suppurative or catarrhal ; (2.) Infants and young children may have suppuration of the middle ear, without evidences of pain, or without rupture of the drum membrane ; (3.) In the absence of other known cause of pain, from which the child is evidently suffering, the first cause to be thought of is acute otitis media, and this calls for an examination of the drum membrane ; (4,) It has been shown by examination of the middle ear during life, and post-mortem, that purulent otitis media is almost always present in diseases of the gastro-intestinal tract, and in broncho-pneumonia, to which diseases it probably stands in a causative relation ; (5.) The cause of death in many acute and chronic infectious diseases, in meningitis, and in the exanthemata, is the result of unrecognised and untreated abscess of the middle ear ; (6,) Repeated earaches in children are ordinarily but signs of acute exacerbations of chronic otitis media resulting from adenoids ; (7,) In adults the chronic otitis media is often but a sequel of the otitis which had its origin in childhood, when it was due to adenoids, and was practically curable.

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ECLAMPSIA. (See "Labour.")

ECZEMA.

T. Colcott Fox, M.B.

We have indicated in former issues of the "Medical Annual" the keen interest which centres in these later years around the disease processes denominated eczema. The controversy has been particularly keen of late in view of the subject being entered for discussion at the Fourth International Congress of Dermatology, 1900. Many papers preceded this discussion, partly in order to try and clear the ground for action, partly as statements of the views entertained by dermatologists, and records of bacteriological researches.

Thus Sabouraud[1] has a *critical essay on the etiology of eczema* in which, amongst other things, he argues against the acceptation, still common in France, of hypothetical diatheses as a cause of eczema. Audry[2] gives his views on the so-called eczema seborrhœicum. Török,[3] who is strongly opposed to Unna's special views, thinks "eczematous lesions" are not specific, but a form of reaction of the

skin, like urticaria, and therefore the possibility of its internal production cannot be set aside. He believes, however, that eczema is in most cases excited by external physical and chemical causes. Unna[4] reproduces the characters of his morococcus laid down in his prior publications. He points out that it has differential cultural characters and distinctive particular signs such as mulberry-like grouping of its colonies in the crusts of eczema. It is distinct from the golden staphylococcus. They are in diplococcic and mulberry masses, congregated at the periphery of the eczema vesicle, in part free and in part englobed by leucocytes, in size varying from $\frac{1}{2}$ to $1\frac{1}{2}$ μ. They also accompany seborrhœic catarrh (ecz. seb.) The vesicles of eczema are different from those caused by staphylococci.

Prof. Tommasoli,[5] of Palermo, who is a strenuous advocate of the autotoxic origin of eczema, and some other dermatoses, returns once more to his thesis. Uric acid, he points out, has been the incriminated agent by all those who believe in the internal origin of eczema. Each time he has examined the urine of eczematous patients quantitatively, except in the gouty, he has found nearly constantly, as in many other autotoxic dermatoses, the quantity of uric acid above the normal, just as Colombini noted a hypotoxic urine in eczema. He then discusses the origin of uric acid. It is formed in the spleen, thymus, in lymphatic organs, in the marrow of bones, in the blood, and is a product of active cellular protoplasm, especially of glandular cells : a product of the destruction of albumin of the body, of the tissues which contain nuclein. It is produced by an alimentation rich in nuclein, by excess of nourishment and drink, by an augmentation in the number, or an increased destruction of leucocytes, by the introduction of salicylic acid, etc. It has thus been found in the blood in a host of maladies. Tommasoli then traces the final destination of uric acid and shows how it may be excreted by the kidneys, or deposited in the tissues, or be gradually broken up in the tissues. It can abound in the blood without showing itself in the urine. The ancient and general opinion is that all individuals who have in the blood an accumulation of uric acid, such as gouty people, are very predisposed to inflammations. Experiments in animals go to support the pathogenetic power of uric acid. Individuals subject to eczema are the same as those in whom we observe asthma, pulmonary emphysema, biliary or renal lithiasis, arterial atheroma, chronic rheumatism, gout, and all other conditions where uric acid is found in the blood (*uricæmia*). Tommasoli admits that the direct relation of uric acid to eczema is not *proved*, but it is an hypothesis which explains the facts better than any other theory, such as (1,) The theory of external

irritant agents or reactions of the skin, or eczematisation ; (2,) The parasitic theory.

Scholtz and Raab,[6] assistants in the Dermatological Clinique of the University of Breslau, contribute some original researches on the parasitic nature of eczema. They complain that Unna has extended the signification of the conception eczema so as to make it lose all distinct delimitation, for he calls any affection eczema in which the micrococcus is met with, and this organism is an undetermined species or probably comprises several kinds. The French school on the other hand apply the term almost exclusively to chronic catarrhs of the skin due to internal causes, and they exclude for the most part eczematous modifications provoked by external agents (artificial dermatitis). Eczema is not a defined and delimited entity. "Eczematous affections" or eczematisation may appear to be autonomous (*eczema* properly so called), or be produced secondarily (*eczematisation*) in a crowd of other affections. Scholtz and Raab regard the "eczematous affection" as an epidermo-dermitis characterised (1,) By a superficial inflammation more or less acute at its commencement, specially localised in the papillary and external layers of the dermis, accompanied by strong serous hyperæmia and abundant exudation ; (2,) By characteristic specific epithelial desquamative catarrh. Clinically this inflammation is distinguished by reddening and swelling of the superficial cutaneous layers and the appearance of little firm projections formed by swollen papillæ and by vesicles. The authors have investigated sixty cases of eczema (fifty of commonly accepted type and ten aberrant). All the cultures have given an absolutely constant and characteristic result. With few exceptions the golden pyogenic staphylococcus has always been obtained in pure or nearly pure culture. These staphylococci are found not only in the exuding serum, but the superficial scales, and they can penetrate into the interior of the tissues. The authors consider the organism parasitic and the cause of the inflammation.

To check these conclusions they have investigated the *bacterial flora of the normal skin* and carried out some *experimental researches*. The normal flora is not copious, and exists only on the surface of the skin. White staphylococci are the most abundant, and if golden staphylococci are found regularly, their number is very restricted. In eczema the flora is far more constant and homogeneous. Lastly, the authors carried out some experimental inoculations on their skins with staphylococcus cultures and set up a picture like a slight acute eczema. The conclusion is that the pathogeny of eczema is complicated. External irritants are to be placed in the first line, then internal factors

such as toxic and vasomotor influences ; and lastly, the staphylococcus multiplies in a favourable soil.

Leslie Roberts[7] in a contribution to the study of eczema first discusses the intimate nature of the inflammatory process, the functions of the epidermic cells, their metabolism, and then considers and applies the general principles of Hering concerning the action of a foreign excitant in modifying metabolism. He then details an experiment connected with the raising of a blister from which the conclusion is drawn that under the influence of an irritant the epidermis secretes a proteolytic ferment which is destroyed by alcohol. He thinks eczema cannot be considered as a morbid entity. It is not the constant result, always similar, of the action of a single determined agent, for a crowd of irritants produce other reactions than eczema, and the latter can be the result of very diverse irritations. The arguments put forward by Unna in favour of the unique or preponderating *rôle* of the morococcus in eczema are not convincing, according to Roberts. Eczema is probably produced by some epidermic irritant, acting almost invariably in conjunction with some functional alteration of the epidermic cells, of circulatory or nervous origin.

Brocq,[8] in a memoir entitled *La Question des Eczémas*, extending to two hundred pages, first reviews the conception of eczemas held by different authors, old and modern, from Willan and Bateman, the old school of Saint Louis, and Hebra onwards. He then discusses the signification of the word eczema, and examines the clinical, anatomo-pathological, and pathogenic criteria. A third part is devoted to modern etiological and pathogenic theories, including that of the internal origin of eczemas, and their microbial nature, and finally there is an essay on the general conception of true eczemas. It is impossible to fully analyse this interesting memoir here ; but it should be read by all who desire to grasp the questions at issue. Willan and Bateman conceived eczema to be a purely vesicular affection (an eruption with a special vesicle), provoked by irritants of internal, but especially of external origin, and comprising artificial eruption characterised objectively by little grouped vesicles, but a constitutional irritability of the teguments was necessary.

Later observation showed that the eczematous process might run through a series of changes from congestion of the skin such as vesiculation, pustulation, serous discharge, and denudation of epidermis, crusting, and scaling, and that it might display some one of these stages predominantly. Hence it came about through Hebra, Hardy, and E. Wilson, that the conception of eczema was gradually widened, and such dry affections as the lichen circumscriptus of older authors,

and certain vesicular and pustular eruptions, such as impetigo, were added. On the pathogenetic side two principles were prominent. To some writers eczema could arise from irritant local causes, or sometimes be associated with ill-defined internal causes. To others eczema could develop under the influence of multiple internal or external occasional (exciting) causes, but these only acted on individuals prepared by anterior predisposing causes or by reason of special predispositions inherent in the individual, *e.g.*, arthritism, herpetism, eczematous diathesis of Wilson, etc. In more modern times, Unna, starting from E. Wilson's standpoint, developed views which tended to revolutionise the old conceptions. The word eczema lost for him its old signification of an eruption objectively vesicular. He laid down as definite criterions of eczematous affections: (1,) An anatomical criterion (parakeratosis); (2,) An etiological criterion (the morococcus). Brocq shows how Unna developed his conception of eczema seborrhœicum which tended to embrace the most part of the old eczema and some other affections such as psoriasis. Many dermatologists have accepted Unna's view wholly or in part, but on the other hand others strenuously resist it.

The later French school again have disengaged from true eczema: (1,) The seborrhœic eczemas; (2,) The microbic folliculites and impetigos; (3,) Dysidrosis; (4,) The artificial vesicular eruptions: (5.) The lichen of older authors. The question of the artificial vesicular eruptions is a test case. Hebra held that he could excite eczema at will by irritating the skin, *e.g.*, with croton oil, but French writers deny this. Brocq does not deny that a dermatosis may be produced by external irritants, parasites, scratchings, etc., having absolutely the aspect of true eczema, and such he would call it, but he refuses to include all the dermites, even when vesicular. *Lichenification* is the term applied by some French authors to a peculiar dry thickening of the skin set up by constant scratching for the relief of a localised pruritus. They do not include it with eczema, though it can complicate the latter. Similarly Besnier has invented the term *eczematisation* to denote the eczematic symptoms which arise as a complication in certain irritable affections such as the prurigos. Here it is not an essential malady, an eczema, but a symptom.

In a further communication on the *nummularisation of eczema* Brocq[9] designates under the name of *eczema* a very special dermatosis which appears to be distinctly marked objectively by a particular vesicle, almost always minute, either more or less aborted and characterised by a crust set in the epidermis and resulting from the drying up of the vesicle (histological vesicle), or fully developed and

containing a serous and citrine coloured liquid, which, after rupture, drys on the surface of the skin and forms crusts of variable aspect. These elementary lesions develop nearly always upon a more or less erythematous ground. This syndrome, pure and uncomplicated, is the *eczematisation* of Besnier, but not the eczematisation conceived by Sabouraud. The second great character of true eczema is its special evolution by successive outbursts and its marked tenacity.

When a dermatosis, which is well defined objectively and in evolution, such as the prurigo of Hebra or the nevro-dermite chronique circonscrite (circumscribed pruritus with lichenification, the chronic lichen simplex of Vidal), is temporarily complicated by an eruption objectively analogous to that just described as eczema, and it disappears readily under local treatment, Brocq does not call it a true eczema but a complication of eczematisation ; it is eczematised.

Again, upon a pre-existing dermatosis, such as *pityriasic or psoriasiform seborrheide* (so-called eczema seborrhœicum) incessant outbursts of eczematisation can occur and prove very tenacious. Here we have a real super-position of two maladies. Brocq confesses that these distinctions may be only subtilties and nothing more ; that in the two series there is in action only one malady, in one case fugacious, in the other persistent, grafted on the original affection. Still, he holds, it is at present useful to make the distinction.

At the Fourth International Congress of Dermatology and Syphiligraphy, held in Paris, 1900, one of the subjects selected for discussion was the *Parasitic Origin of Eczema*. We take from the "British Journal of Dermatology the convenient *resumé* of the chief points brought out.

Dr. Unna (Hamburg), held that :—

"(1,) The uncertainty which exists concerning the pathogenic agent of eczema is due in great measure to the absence of more precise knowledge concerning the various forms of cocci, so as to be able to distinguish between cocci which present the closest similarity in their appearance and yet possess very different pathogenetic qualities.

(2,) In eczema numerous micro organisms are present, and among these there are several which when re-inoculated reproduce eczema. Eczema is thus a contagious disease, and in certain circumstances it can become epidemic.

Dr. Unna illustrated his report by diagrams, showing the method of division of various cocci, and he also exhibited a number of cultures of the cocci found in eczema.

Professor Jadassohn (Berne) arrived at the following conclusions, which considerably differed from those of Dr. Unna :—

(1,) He found that in the great majority of eczemas one cannot definitely make out organisms to which may be attributed a pathogenetic *rôle*. The pathological factors in these cases are most probably local on general predispositions, or the action of mechanical or chemical irritants.

(2,) In eczema, as in many other diseases of the skin, the invasion of the ordinary micro-organisms (staphylococci and streptococci) can generally be demonstrated. The consequences of such an invasion depend on the virulence of the microbes, and on the local and general predisposition of the patient, and the result produced varies in severity from a slight irritation up to a decided impetiginisation."

Dr. Galloway (London) held that:—

(1,) Cocci producing whitish cultures are present in early and uncomplicated lesions of papulo-vesicular eczema. These cocci agree in most of their biological properties, but vary in certain particulars in different strains. The fact of absence or presence of oxygen in the atmosphere in which they grow seems to be one of the conditions producing these differences.

They are all examples of the type staphylococcus pyogenes albus, and possess to a greater or less extent the well-known pathogenetic powers of this organism.

There is no reason for separating these organisms into species, and still less reason for stating that one of these species is the specific cause of eczema.

(2,) This white coccus, and other cocci, such as the staphylococcus pyogenes aureus and the streptococcus pyogenes, which are so often present, especially in the later stages of the disease, must have very important influences on the development of the malady. These organisms do not grow in the impaired skin in such large numbers without producing some effect, and from our knowledge of their influence in other situations, this effect can hardly be other than noxious.

The local infectivity and chronicity of eczema, the ease with which purulent manifestations occur, should be in all probability ascribed to the presence of such bacteria. The knowledge of their presence and of the results they produce must be a powerful controlling influence in treatment.

(3,) Other factors are concerned in the production of any attack of eczema, of which the following may be mentioned as especially efficient:—

First, certain organic lesions, especially such as produce circulatory stasis in the skin and consequent œdema and malnutrition of both cutis and epidermis.

Second, the predisposition of the skin, usually recognised as the seborrhœic state, which permits the free growth on it of vegetable parasites, and especially of certain bacteria. This state is probably the most effective of all the conditions of susceptibility, or of lowered resistance in the causation of eczema.

Third, the clinical evidence seems to be conclusive that there are certain conditions of imperfect metabolism which predispose to the onset of eczema, or at any rate to its recurrence, and of these the most common are those associated with improper digestion and assimilation of food, especially in the adult ; want of exercise, the impure atmosphere in cities, etc., aggravate this condition, and increase the risk of recurrent attacks of eczema.

M.M. Brocq and Veillon (Paris) concluded that :—

(1,) The existence of a specific micro-organism for eczema has still to be demonstrated.

(2,) The early vesicles of eczema are absolutely sterile.

(3,) The staphylococci which are found in such abundance on the weeping and crusted surfaces of eczemas are merely secondary infections, and these cocci by creating their peculiar lesions on the eczematous skin obscure the primary conditions.

In the discussion which followed these reports Prof. Kaposi, of Vienna, declared against the parasitic theory. Dr. Sabouraud, of Paris, gave a most interesting demonstration by large diagrams of the histology and bacteriology of eczema. He found some early vesicles were absolutely sterile but there were several eczematous conditions of the epidermis which were due to micro-organisms.

Prof. Neisser (Breslau) agreed with Sabouraud that eczema could be produced without the intervention of micro-organisms, but that in its ultimate evolution micro-organisms played an important *rôle*. He did not believe in the existence of a single disease which merited the name "eczema," but thought that many diseases were included under that term. He regarded eczema seborrhœicum as a distinct entity.

Amongst other contributors Dr. Arthur Whitfield (London) announced the result of a careful research on one particular phase of eczema, which manifests itself in the form of small dry discs on the cheeks of young children, and often called *seborrhœa sicca*. A peculiar coccus, usually a diplococcus, was invariably found in the lesions, but not in the healthy skin of the face, which grew in the form of a whitish or yellowish culture on agar, and did not liquefy gelatine. Inoculation experiments proved negative.

As we stand at present, therefore, the greatest diversity of opinion is disclosed as to what dermatoses we should include under the term

eczema. The morococcus of Unna is generally regarded as an ordinary staphylococcus with some peculiarities. Eczema is not regarded by the majority of dermatologists as a parasitic disease due to a specific organism, nor are its several phases thought to be due to different organisms.

Neuberger [10] obtains excellent results in all kinds of *chronic* eczema in infants by the administration of arsenic alone.

In infants of two years and over he gives in milk after a mid-day meal 1 drop of a mixture of equal parts of **Fowler's Solution** and distilled water. In the third and fourth week the dose is increased to 2 or 3 drops, and so gradually up to 6 or 7 drops. After cure the dose is gradually decreased. In infants under two years he starts with 1 drop dose and gradually increases it to 5 drops as a maximum of a mixture of Fowler's solution, 1 gr. 5, and distilled water, 3 grs. 5.

Taix, in a "Thèse de Montpellier," 1898, concludes that the treatment of eczema by **Picric Acid Dressings** is indicated in acute eczemas, in acute exacerbations of chronic eczemas, particularly if there is epidermic excoriation and sweating, and in impetiginous eczemas of infancy.

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ELECTROTHERAPY IN EYE AFFECTIONS. (See "Eye Diseases.")

ENDOMETRITIS.

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

Montgomery [1] very properly points out that the treatment of endometritis must depend on the presence or absence of complications. Endometritis complicated by peritonitis, cellulitis, carcinoma, myoma, and displacements must be treated secondarily; the complications must receive first consideration. For uncomplicated cases Montgomery holds that the most important point is to secure free drainage, and the second is to decrease congestion. Both these considerations are to some degree secured by placing and maintaining the uterus in its normal position, hence the value of tampons. They raise the organ to a higher level and thus decrease the congestion. Medicated, especially with glycerin, they produce a free, watery discharge, which still further depletes the uterus, and especially its glandular structure. Thus drainage and diminished congestion are both secured.

An open, patulous canal invites intra-uterine applications. A narrow, tortuous canal should absolutely preclude all intra-uterine treatment, unless dilatation has first been done. In such cases, the use of the curette, following dilatation, will be of value, and greatly shorten, if not render unnecessary, any subsequent local treatment.

In suitable cases, the treatment may be antiseptic, astringent or caustic, according to the conditions present.

Intra-uterine irrigation with double current tube is very efficacious. For this purpose, **Hot Water,** plain or medicated, with **Bichloride of Mercury** 1–3000, **Formalin** 1–1500, **Boric Acid** 1–100, or **Soda Bicarbonate** 1–50 may be employed. The efficacious astringents are **Zinc Sulphate** 1–50 to 1–20, **Zinc Chloride** 1–100 to 1–20, **Silver Nitrate** 1–10 to 1–5. The astringents in the stronger solutions are also caustic.

Laroyenne[2] has revived an old remedy in the form of **Chloride of Zinc.** For advanced cervical metritis with ectropion swabbing the cervix answers well.

In cervical endometritis causing discomfort from profuse tenacious discharge, the curette or liquid caustic does not effect a permanent cure. Crayons of the chloride, on the contrary, prove highly efficacious. But the old clumsy, thick crayon is objectionable, a very thin piece, about $\frac{1}{30}$ inch thick and $\frac{1}{2}$ inch long, is sufficient. Three or four applications at a few days' interval are required. There need be no fear of stricture.

With regard to curetting, Siedlecki[3] dwells on three dangers which it entails, namely, perforation of the uterine wall, opening up of an old focus of inflammation, and cicatricial obliteration of the uterine cavity. The last accident has been known to follow when the curette is used with want of skill. The danger is particularly great when abortion has occurred, which is one of the conditions when practitioners are most ready to use the instrument.

He relates a case where, on examining a patient for old-standing amenorrhœa following curetting, the uterine cavity was found completely closed; the finest probe could not be made to enter for more than two-fifths of an inch.

Kaplin-Lapina[4] considers that catarrhal endometritis complicated with non-suppurative lesions of the adnexa and with a neuro-arthritic constitutional state is especially amenable to **Electric Treatment,** according to the method of Apostoli. Locally the treatment of choice would be the intra-uterine chemical galvano-cautery, repeated two or three times a week for from ten to fifteen weeks, with a progressively increasing dose.

However good such a method might be, we consider that the time

required (ten to fifteen weeks) is in most cases prohibitive, when much more rapid and equally efficacious methods are available.

A heroic plan is that described by Dührssen,[5] who reports four cases in which the following operation was performed for obstinate hæmorrhage: The anterior vaginal fornix is opened by a transverse or T-incision, the bladder separated, and the vesico-uterine fold of peritoneum incised. The uterus is drawn downward and is split in the median line from the cervix to the fundus. By making additional incisions as far as the cornua the whole interior of the uterus is exposed. The entire lining membrane of the organ is then excised with a narrow-bladed knife, after which the edges of the uterine wound are sutured, the uterus is replaced, and the peritoneal and vaginal wounds are closed. By careful dissection of the peritoneum it is possible to make the operation entirely extraperitoneal. The hæmorrhage is not usually great, although in one case Dührssen was obliged to tie the uterine arteries.

The operation is advised in intractable cases of hæmorrhagic endometritis, or suspected malignant degeneration of the corporeal endometrium in which hysterectomy is not advisable.

The intra-uterine application of steam (vaporisation, vapo-cauterisation, atmocausis) is not, we think, destined to become very popular; the risks are stricture of the cervix, obliteration of the uterine cavity, and the premature induction of the menopause. The indications are thus summarised by Brothers[6]:—

(1,) *As a hæmostatic* it has been employed most successfully in cases of non-malignant post-climacteric uterine hæmorrhages. It has proved curative in the various irregular bleedings met with in connection with catarrhal fungoid, or hæmorrhagic endometritis.

(2,) *As a caustic* it can be relied on to destroy the mucous lining of the uterus, even to the extent of obliterating the uterine canal.

(3,) *As a bactericide* it may be used in cases of gonorrhœal and septic puerperal endometritis.

(4,) *To reduce the bulk of the subinvoluted uterus*, Pincus has frequently resorted to intra-uterine vaporisation with success.

Schlutius[7] has employed it with success in cases of fœtid discharge, cervical catarrh, and hæmorrhage due to chronic, hyperplastic, gonorrhœal or hæmorrhagic endometritis.

Czempin[8] published a report of a uterus removed with a myoma and a tubo-ovarian cyst two months after the patient, aged thirty-three, had undergone treatment by injection of steam into the uterine cavity. He exhibited sections of the uterus before a German society. The vaporisation had, it appears, been carelessly applied, and to the

naked eye it was clear that the mucosa of all the cervix and the greater part of the uterine cavity was reduced to cicatricial tissue.

Flatan,[9] after investigating the matter, concludes by stating emphatically that atmocausis can never take the place of the curette, though it may be useful in conjunction with that instrument.

REFERENCES.—[1] "Int. Med. Mag.," May, 1899; [2] "Lyon méd.," March 19, 1899; [3] "Przeglad Lekarski," No. 6, 1899 (Abst. in "Brit. Med. Jour.," Mar. 24, 1899); [4] "Gaz. méd. de Strasburg"; [5] "Cent. f. Gyn.," No. 50, 1898; [6] "New York Med. Journ.," May 13, 1899; [7] "Wien. Med. Presse," Oct. 15, 1899; [8] "Cent. f. Gyn.," No. 2, 1899; [9] "Monats. f. Geb. u. Gyn.," Sept., 1899.

ENOPHTHALMOS. (See "Eyeball, Prominence of.")

ENTERIC FEVER. (See "Typhoid.")

EPIDERMOLYSIS BULLOSA (HEREDITARIA). *T. Colcott Fox, M.B.*

G. T. Elliott[1] carefully examined the skin in a case long under his care. There was no clue to the heredity usually met with. The bullæ only occurred from traumatism, and were unaccompanied by any sensory or other subjective symptoms. The author regards E. bullosa as a cutaneous condition, not as a disease. The individual is born with a congenital irritability of the vascular supply of the skin. The pathological changes disclose a degenerative process in certain portions of the epidermis brought about by traumatism.

Prof. Colombini[2] met with a remarkable family disposition to this defect. Out of forty-seven members of a family (representing three generations) no less than twenty-four exhibited the disease (eighteen males and six females). It is interesting to observe that some of the affected stated that the eruption had become less marked between the ages of forty and fifty, and completely disappeared in old age.

REFERENCES.—[1] "New York Med. Journ.," vol. lxxi., 1900, p. 585; [2] "Monatsh. f. Prakt. Derm.," May, 1900.

EPIDIDYMITIS. *J. W. Thomson Walker, M.B., F.R.C.S.*

Tuberculous Epididymitis.—Mr. Watson Cheyne,[1] in discussing the operative treatment of tuberculous epididymitis, divides it into partial and radical—the former consisting of scraping and epididymectomy, and the latter of castration. In some cases, however, when performed early, epididymectomy may be classed as a radical, and not a partial, operation.

Scraping is useful in some cases where neither epididymectomy nor castration is advisable or permitted. Such are cases where there is suppuration or where abscesses or sinuses are present, and where castration is not advisable or not acceded to by the patient. It is not

to be recommended in the early stage as a substitute for the other operations.

The operative treatment in ordinary cases lies between castration and epididymectomy.

Castration, especially with high section of the vas, is the most effectual operation if local conditions only be regarded. It is necessary in cases of acute tuberculosis of the testicle and epididymitis at an early period, as the only possibility of checking the disease; it is also necessary in cases where the pain is great, and especially where it is due to suppuration of the substance of the testicle.

In spite of the objections enumerated below, it is advisable in some advanced cases with suppuration where the general health is giving way in consequence, even in the presence of disease of the vesiculæ and prostate. The operation in tubercular epididymitis is a very serious one, and unfortunately one cannot be sure that the disease, even in early cases, will be arrested by the removal of one testicle.

In Watson Cheyne's experience the majority of the cases are bilateral, the affection of the second epididymis occurring soon after the first, or sometimes after a long interval.

It is difficult to obtain permission for removal of the second testicle when it becomes affected, and there is no doubt that the loss of both testicles has a very deleterious effect, especially in older patients. They lose interest in their affairs, become lazy, irritable and morose, and in some cases may actually become demented or maniacal, and a very considerable proportion have ultimately committed suicide.

It is possible, also, judging from experiments on dogs, that the loss of the internal secretion may render the patients less resistent to the attacks of the tubercle bacillus. Epididymectomy to a great extent meets the objections to castration. The generative function of the testis is at once destroyed by the disease, so that the operation cannot be objected to on that account, and at the same time the internal secretion is retained. The patient is more likely to consent to an early operation, and even to a second one on the other side if this become necessary. If performed sufficiently early it may be the means of arresting the spread of the disease. The patient recovers his tone, and the sexual functions, which were in abeyance, return. Even when the seminal vesicles are affected, the disease in them may come to a standstill, so that this is not a contra-indication to the operation.

It is objected that tuberculosis may be present in the testis itself, but even if this is so, partial operations are sometimes very effective, and further, the testis is now isolated from the rest of the genito-

urinary system, and can, if necessary, be treated locally by scraping. Recurrence on the other side does not, according to general experience, take place more often after epididymectomy than after castration.

Epididymectomy is distinctly contra-indicated where there is a deposit in the body of the testis or where the whole testis is involved, when the urinary system is invaded, and when the patient is suffering from advanced phthisis.

Very extensive operations have lately been undertaken for genital tuberculosis in the male. Removal of the testis, epididymis, vas deferens, and seminal vesicles has been recommended and discussed by Bolton,[2] Berger,[3] and Moullin.[4]

Béloséroff[5] considers that removal as for malignant disease is undoubtedly the correct treatment, since it is now certain that tuberculosis is often primarily localised in the genitalia.

Southam[6] has not experienced (in four cases) the untoward results that Watson Cheyne states may follow double castration.

Gonorrhœal Epididymitis.—Janowski[7] recommends that the following ointment should be applied on cotton-wool after cleansing with soap: guaiacol 45 grains, vaseline 450 grains.

Perry[8] gives a report on the use of **Guaiacol** in twenty unselected cases, and notes a quicker relief of symptoms and a shorter duration of the disease than in cases where other remedies were applied. Local applications over the cord and on the scrotum promptly relieve the pain, and the patient is comfortable in from thirty minutes to an hour. Another application becomes necessary in six or eight hours, for the pain returns. The temperature is also reduced by the antipyretic action of the drug. Swelling rapidly diminishes, and is almost gone in five or six days. Dense nodules are less apt to remain in the epididymis.

The drug has less effect on subacute cases, and none on chronic.

The method he uses is the application of 1 cubic centimètre of pure guaiacol over the inguinal canal, and over the scrotum he applies a mixture containing 1 part of guaiacol to 2 parts of glycerin. Some peeling of the scrotum occurs. Two, or even three, applications may be necessary on the first day.

Pigot[9] considers **Salicylate of Sodium** superior to all other remedies employed in cases of orchiepididymitis with intense pain. If the cord and tunica vaginalis are affected the effect is not so marked.

Bettman[10] recommends a solution of **Salicylate of Methyl** in olive oil, applied on wool and covered with caoutchouc tissue. The application is renewed after twelve hours.

REFERENCES.—[1] "Brit. Med. Jour.," Dec. 30, 1899; [2] "Jour. of Cutan. and Gen.-Urin. Dis.," Dec., 1899; [3] "Jour. des Praticiens," No. 16. 1899; [4] "Brit. Med. Jour.," Jan. 13, 1900; [5] "Rev. méd. de la Suisse Rom.," March and April, 1899; [6] "Brit. Med. Jour.," April 21, 1900; [7] "Indépen. méd.," May 3, 1899; [8] "Med. Rec.," Jan. 7, 1899; [9] "Gaz. hebd. de méd. et de chir," April 23, 1899; [10] "Lancet," Dec. 23, 1899.

EPIDIDYMITIS (Recurrent). *C. F. Marshall, M.D., F.R.C.S.*

Chetwood remarks that a testicle once affected with epididymitis is predisposed to later attacks from slight causes, such as sexual excitement, etc., apart from recurrent urethritis. In severe chronic cases where much pain and trouble are caused, he recommends **Vasectomy**. The author quotes nineteen cases in which he performed the operation, and comes to the following conclusions :—

(1,) Surgical resection of the testicular ducts, which obliterates the lumen entirely and prevents ascension of the spermatozoa into the urethra, also prevents the descent of inflammation from the urethra into the epididymis.

(2,) The pathological occlusion of the ducts by inflammatory process only accomplishes this result partially, since it is clearly in evidence that many of the cases having had double epididymitis, still continue to suffer from a recurrence of inflammatory attacks in the epididymis, and since it is also proved that some of these individuals continue to have vital spermatozoa, and to retain the capacity to impregnate their wives.

REFERENCE.—"Amer. Journ. of Cut. and Gen.-Urin. Dis.," Oct., 1900.

EPILEPSY. *James Shaw, M.D.*

At the 1899 meeting of the British Medical Association, several speakers, Shuttleworth, Telford Smith and others,[1] deplored the absence of adequate accommodation for the care and treatment of adult sane epileptics and poor epileptic children. When the latter are also imbecile they are refused by the homes and asylums for idiots and imbeciles, and are relegated to the workhouse and lunatic asylum amidst deleterious surroundings. Fletcher Beach spoke well of the **Bromides** with, when in large dosage, **Liq. Strychninæ** and **Liq. Arsenicalis** as correctives. He recommends, when the patient is employed, a drachm dose of bromide to be given at bedtime instead of the usual three 20-grain doses in the daytime. Treatment should be continued for at least two years after the last fit. Haig strongly advocated a vegetarian diet, with the addition, in some cases, of milk and its derivatives.

Fleury[2] advises careful regulation of diet, modification of surroundings, total withdrawal of alcohol, administration of euonymin, cascara, enemata, etc., before and during treatment with bromides. The bromides, especially the **Sodium Bromide,** will then render much service. The time of administration should be regulated by the time of occurrence of the fits. Animal food should only be given in small quantities for the mid-day meal, and the evening meal is preferably vegetarian. Massage, cold douches, brine baths, and mountain air are of importance. The hypodermic injection of an artificial serum, consisting of 1 per cent. of sodium phosphâte, sodium sulphate, sodium chloride, and carbonic acid is useful; 8 to 10 grammes of this may be administered daily.

Hesse[3] says it is certain that the use of **Bromipin** is a great advance in the treatment of epilepsy. In support of this view he quotes the practical observations of Gessler, Leubuscher, Zimmermann, Cramer, Wulff, Dornblüth, and Scipio Losio on its action in cases of epilepsy. In a case of Gessler's, the attacks, which were frequent and violent and not benefited by adonis and sodium bromide, were rendered less violent by 3 teaspoonfuls of 10 per cent. bromipin daily, and the patient remained for a considerable period free from attack. F. Schultze gave it to six aged patients—bad cases. He began with 4 grammes of 10 per cent. bromipin daily and gradually increased the dose to 20 or 25 grammes and in one case to 30 and 35 daily; then gradually reduced the daily dose to 10 grammes. With medium doses of 10 to 15 grammes there was marked improvement in all cases, and with larger doses very distinctly favourable results, even patients who had had violent daily attacks remaining free for fourteen days. The mental condition of the patients was very much improved, and the improvement was maintained after the reduction of the dose. The attacks became milder, acne nodules and pustules resulting from previous use of alkaline bromides disappeared; the appetite was good, the digestion undisturbed, and the fœtid odour of the breath no longer perceptible. He confirms previously expressed opinion that the bromine present in bromipin possesses a greater degree of activity than that present in bromine salts or bromalin. The other observers bear similar testimony to the efficacy of bromipin. In the case of a child of eleven, with whom other treatment had been unsuccessful, Wulff obtained very satisfactory results. For patients who object to treatment with bromides bromipin is to be recommended. It is a compound of bromine with sesame oil, and is prepared as 10 per cent, and as 33·3 per cent. bromipin. The former makes an emulsion with water, the latter is best given in 2-gramme capsules.

REFERENCES.—[1] "Brit. Med. Jour.," Sept. 16, 1899; [2] Ibid., Epit., Aug. 4, 1900; [3] "Allg. med. Centr. Zeit.," No. 21, 1900.

Græme M. Hammond, M.D., New York.

Dr. L. Pierce Clark[1] of the Craig Colony, has written a most exhaustive digest of the most recent work on epilepsy. He has carefully reviewed all of the most recent literature on this subject, and condenses all of the salient and important features in an admirable manner. I give in full his remarks on the treatment, referring the reader to the article itself for information in regard to the etiology, pathology, clinical manifestations, diagnosis, etc. :—

MEDICAL TREATMENT.—The treatment of epilepsy by **Bromide Medication** still holds first place in drug treatment, although many are yearly declaring against its use. Its abuse has been great, and the routine treatment of all cases by bromides is not only poor therapy, but actual, culpable negligence. Some cases tolerate bromides very well, others not at all. Laws governing one in the selection of cases where it will do no harm are still undiscovered. While large amounts of bromides are commonly borne with impunity, all drugs are frequently of no use even as adjuvants to hygienic methods. Gelineau has carefully considered such cases, and aptly terms them cases of "intangible epilepsy"; intangible not only to bromides but to all treatment. Undoubtedly, such cases have a gross organic lesion impossible of amelioration, and are fortunately not very common.

In order to avoid the necessity of giving large doses of bromides, and thus cause an intolerance of the drug, Toulouse and Richet have devised a diet in which they endeavour to cut down the quantity of common salt which their patients take in food, the rationale of the treatment being that the less of sodium chloride there is in the economy the less bromide salt necessary, as sodium chloride counteracts the effect of the bromide salt. Some thirty epileptics were treated successfully by this method; but one-half the usual amount of bromides (2 gms.) was used, while the daily consumption of salt was reduced from 14 gms. to 2 gms. The experiment was conducted carefully, and seems destined to be of signal value in bromide medication in selected cases. Féré has very recently proved that if bromides are given to elderly epileptics, with great care as to diet and hygienic states of the skin, etc., good results may be obtained, which is contrary to generally accepted belief that there is a marked intolerance of bromides in the aged.

The use of **Ipecac.** has been tried with bromides when treatment resulted in failure by use of bromides alone. It is believed that the ipecac. counteracts the bulimia and resulting bolting of food so com-

mon in certain cases of epilepsy. The opium bromide treatment, which never had much to recommend it, has not been favourably commented upon in recent reports.

J. G. Smith, in a very careful *résumé* on the comparative use of strontium bromide and potassium bromide, concludes that potassium bromide will not be superseded for four excellent reasons : (1,) Rapidity of action; (2,) Durability of effect; (3,) Smallness of dose; (4.) Cheapness. Wright's study of the brain of an epileptic, who died of enormous doses of bromide, proved to him that the drug attacks the peripheral protoplasmic processes of the ganglion cells of the cortex. Von Bechterew reaffirms his previous statement in regard to the good results to be obtained in giving adonis vernalis with bromides, especially when there are cardiac symptoms indicating its use. One formula given by him contains potass. brom., sod. brom., codeia and infus. digitalis.

Trional has been tried by Maunier, who gives it in doses of gr. v to xx with good effects ; results contrary to those obtained by others. Sodium salicylates and antipyrine have been advocated by Pepper.

Many different means have been advised of late to cut out the possible auto-toxic agent in the treatment of epilepsy.

The influence which meteorological conditions have upon epilepsy has been studied by Sokolow for two years. He infers that there are laws in operation between earth magnetism and epilepsy, and between the seasons of the year and frequency of attacks. There are so very many modifying agencies of the every day life of the epileptic which might influence the epilepsy favourably or unfavourably that it is well nigh impossible to fathom the meaning of statistics in regard to the relationship of the meteorological conditions to that of epilepsy. Sokolow found the seasons favourable for fewness of attacks to be in the following order : Spring, autumn, summer, winter. This author intends to report more at length at some future time.

Certain authors maintain that infectious diseases have so decidedly a favourable influence over a pre-existing epilepsy that they have advocated the establishment of some of these different processes, such as malaria and erysipelas, to cure the epilepsy. Bourneville, Seglas, Pellissier, Toulouse and Marchand, and Marandon de Montyel have all handled the subject from different view points, and arrived at different opinions. In these different studies, infectious diseases are shown to be both harmful and beneficial to the epilepsy. The reviewer has known many instances of both results, and thinks the effects are so uncertain that it is the part of a wise physician to counsel his epileptic patient to avoid any infection whenever and

wherever possible. Hessler, of Indianapolis, is probably entitled to priority in the use of erysipelas serum for the cure of epilepsy. He reports good results from apparently insufficiently elaborated and inextensive experimentation.

In trying to avoid the possible auto-toxics, Maurice de Fleury advocates the use of injections of **Serum** ; this increases the action of the bromides to such an extent that he was able to get good results with but 3 gr. of bromides where formerly 1 or 2 drachms were given. The serum is diuretic and relieves the arterial tension, and is antitoxic.

The milk regimen and alterations of the diet have met with signal success in many carefully selected cases of epilepsy. The whole character of life, such as may be embraced in colonisation of epileptics, offers to revolutionise the treatment of epileptics. The many forms of treatment, old as well as new, can only be put in practical operation when the patients are properly colonised and brought under careful observation and regulation.

Surgical Treatment.—In looking over the literature one is much impressed that trephining for the cure of epilepsy is decidedly on the decline. A few cases have been reported of cure by trephining, but the percentage is very small, not more than 2 or 3 per cent. of those operated upon. The reason for this decline of trephining as a corrective measure is obvious. The *predisposition in epilepsy is paramount*, and trephining does not strike the root of the evil. When the excitant is of the nature of a direct trauma to the cerebral cortex, is recent, and the hereditary factors are not great, trephining may do some good. Very many cases are made worse by trephining, which is a fact that should be carefully borne in mind by the physician before advising operation. Cases rendered worse by operation have been recently reported by Spratling, Bourneville and Rellay.

Removal of the ovaries for cure of epilepsy, and, in fact, all gynæcological procedures for treatment of epilepsy, have very little to recommend them : nevertheless, Love has recently reported a cure by removal of the ovaries. The reviewer has seen several cases in which the physical and mental conditions, as well as the epilepsy, were rendered worse by such an operation. Surgical interference in the epileptic should call for the same treatment as another not afflicted with epilepsy.

As to the surgical procedure of resection or section of the cervical sympathetic, it is destined to fall into deserved disuse. Many experiments and investigations have been undertaken within recent years, and in the vast majority of instances, even when such workers were

willing and desirous of finding good results from the practice of the operation, they report unfavourably to its further trial. Many writers maintain, with apparent justice, that the operation is as little indicated theoretically as practically.

Clark and Prout [2] report forty-five cases of status epilepticus. The modern notion of status is that it is the acme or true climax of the disease, and not a chance termination of epilepsy that by proper treatment could have been avoided. On an average, eleven years elapsed between the beginning of epilepsy and the occurrence of status. The temperature elevation in status usually begins after the first severe convulsion, and rises in proportion to the number of seizures. Almost always there is Cheyne-Stokes respiration, but it is not so unfavourable a symptom as in some other disorders. The prognosis is grave. A low temperature is supposed to be a fair sign, though there may be a recovery after a temperature of 107·5° F. Paralysis of the muscles of deglutition is a very unfavourable symptom. The gradual, steady increase in all the symptoms is the most unfavourable sign of all. It is possible to abort a case of status if taken in time. The plan of treatment was as follows: At the onset, the patient was given a dose composed of 25 grains of bromide, 20 grains of chloral, and a large dose of opium or morphine. If the convulsions were not controlled by this, 30 or 40 grains of chloral were given by the rectum, and if this was not sufficient, bromide was given hypodermically in a part of the body that will be the least painful if abscesses form, as they often do after such injections. These are very painful, and should only be given in the stuporous stage.

REFERENCES.—[1] "Journ. Nerv. and Ment. Dis.," June and July, 1900; [2] "Med. News," Nov. 10, 1900.

EPISTAXIS. *W. Milligan, M.D.*

A. Brown Kelly [1] calls attention to the occurrence of epistaxis from the anterior ethmoidal veins, and thinks that it may be due to their intimate connection with the intracranial circulation. The ethmoidal veins anastomose with the veins of the dura mater, and with the superior longitudinal sinus, and the fact that they can be injected from the longitudinal sinus proves the absence of valvular obstruction to any backward flow. Hæmorrhage from these vessels is usually easily controlled by packing **Strips of Gauze** between the septum and the anterior end of the middle turbinated body.

REFERENCE.—[1] "Lancet," Feb. 22, 1900.

ERUPTIONS. (See "Arsenical Eruption," "Erythema Vaccinicum," and "Milker's Eruption."

ERYSIPELAS. (See also "Abscess (Alveolar) and Erysipelas.")

Synopsis.—(Vol. 1900, pp. 43 and 195). Injections of Antistreptococcic Serum into abdominal wall in 10 c.c. doses. Injections of Metakresolanytol. Internal use of Sodium Benzoate: ℞ Sod. Benzoatis, 2; Gum Acaciæ, 3; Sacch. Alb., 4; Aq. Dest., 40 parts. A teaspoonful to a tablespoonful, according to age, every two hours. Painting affected area and beyond with 10% Iodol in Collodion. Rabinovich cauterises by covering the affected part with Strips of Moist Gauze, placing over this a pad of wool soaked in spirit which is lighted and retained in position as long as the patient can bear it. Marmorek's Serum (?).

ERYTHEMA VACCINICUM AND OTHER VACCINAL ERUPTIONS.

T. Colcott Fox, M.B.

This term is often applied to two phases of "Erythema," the one a diffuse blush spreading from the seat of vaccination over some portion of the periphery, and due to a local inflammation, and the other occurring about the time of the maturation of the vesicles as a disseminated eruption due to the absorption probably of some toxic substance. Neither of these conditions are specific but may be seen after other infections, local and systemic. Both of these phases are seen in the accompanying illustration (*Plate I*). The disseminated eruption portrayed is the macular erythema designated *Roseola*, but it must be borne in mind that the erythematous rash evolving may be also scarlatiniform, morbilliform, or of the coarser, bolder type, known as erythema multiforme, as in many other systemic poisonings. This roseola usually denotes an intoxication of no gravity, and the eruption disappears in two or three days.

At the American Dermatological Association[1] a long discussion took place on the subject. J. T. Bowen detailed five cases of *bullous dermatitis* (dermatitis herpetiformis) following vaccination in children and possibly in causal relation. There was a marked tendency to grouping about the mouth, chin, nose, and ears, and upon the backs of hands and feet. This distribution, as several speakers remarked, suggested impetigo or erythema multiforme. Gilchrist referred to a case of post vaccinal herpes iris recorded by Pardee, and F. H. Montgomery mentioned a typical erythema multiforme evolving five days after vaccination.

Haslund[2] writes a paper on *generalised vaccinia*, *i.e.*, the production of vaccine pustules of various sizes over a wide surface of the body. Some authors think such an eruption the expression of a very strong infection, as in inoculated variola, or of a great susceptibility. Others regard such a phase as due to auto-inoculations. Others again acknowledge both modes of causation. Haslund thinks the

PLATE I.

Vaccinal Roseola

cases that have come under his observation spontaneous. This generalised eruption is very rare in Denmark.

REFERENCES.—[1] "Journ. Cut. and Gen.-Urin. Dis.," Aug., 1900; [2] "Archiv. f. Derm. u. Syph.," 1899, xlviii, p. 205 and 371.

ERYTHEMATA. *T. Colcott Fox, M.B.*

Antony[1] deals with two cases occurring during the convalescent period of *Influenza* and due, it is suggested, to secondary infections.

Renders[2] describes a case of a healthy robust young man, who for three days suffered from severe headache, vomiting, shivering, and on the third day colicky pains without diarrhœa, delirium, a temperature 102·2° F., inflamed pharynx, tonsils and velum palati, albuminuria, foul tongue and fœtid breath. On admission to hospital an erythematous rash, but not punctate, involved the œdematous hands and feet, and the forearms, and legs, but did not terminate in desquamation. On the third day the fever declined to the normal; next day, however, and on the seventh and ninth day, the symptoms recurred without the rash. A toxæmia was diagnosed and it was attributed to *food poisoning*. Malaria was excluded though the patient came from a malarious part.

Deschamps[3] describes two cases of scarlatiniform rashes occurring at the *prodromal stage of measles*. He quotes records of transitory diffuse redness, small rose papular, urticarial, scarlatiniform, morbilliform, and miliaria-like rashes, generally appearing four or five days before the measles rash. Hutinel described erythematous eruptions ending fatally in the eruptive or convalescent period of measles. The eruptions are said to be due to streptococcus or other infection.

Breton[4] records a case of scarlatiniform erythema following each *hypodermic injection of cacodylate of sodium*. Balzer is said to have seen exfoliative dermatitis follow such injections.

REFERENCES.—[1] "Gaz. des Hôp.," 1899, p. 445; [2] "Soc. Méd. des Hôp. Paris," Dec. 22, 1899; [3] "La France Méd.," Dec. 22, p. 801, 1899; [4] "Gaz. des Hôp.," June 19, 1900.

EXOPHTHALMIC GOITRE. (See "Goitre.")

EXOPHTHALMOS (Pulsating). (See also "Eyeball, Prominence of.")
Priestley Leech, M.D., F.R.C.S.

Bodon[1] relates two cases of this disease successfully treated by ligaturing the common carotid. Traumatic pulsating exophthalmos is due to the fact that the internal carotid ruptures into the cavernous sinus, and as a result the sinus becomes distended with blood. The increased pressure prevents the return of blood in the superior

ophthalmic vein and consequently stasis occurs. Sooner or later the eyelids become swollen, the conjunctiva ecchymosed ; there is œdema of the fundus oculi with enlargement and tortuosity of the retinal vessels and proptosis of the eyeball ; owing to the obstruction the blood finds its way into the facial and inferior ophthalmic veins ; the pulsation of the eyeball is synchronous with the heart beat and a systolic murmur is heard in the neighbourhood of the orbit. The patient complains of blowing noises, severe headache, and loss of sight. The pulsation and headache disappear when the carotid is compressed. Traumatic exophthalmos is sometimes present on both sides, and in this case the symptoms are not due to an aneurysmal dilatation on both sides, but to the increase of pressure on the one side being communicated to the opposite cavernous sinus through the sinus circularis. The treatment at first is, keep the patient in bed, give narcotics and cold applications to the head. With complete rest a thrombus may form and close the opening between the artery and vein. Digital compression is unsatisfactory, it causes considerable pain, and pressure cannot be applied so as to exclude the vagus and sympathetic ; ligature of the common carotid is the most rational treatment. Bodon describes two cases in which the carotid was ligatured on both sides. In one case the headache and pulsation still continued, and it was only after Dollinger had resected a portion of the ophthalmic vein that these symptoms disappeared. Fifty-eight cases have been reported where the carotid was ligatured on one side ; ligature of both carotids has been done only in six cases. The mortality has been high but sepsis has been the main cause of death. Very few died from the immediate effects of the operation. With antisepsis the prognosis ought to be more favourable. It is important not to allow too long an interval to elapse between the ligature of the two carotids. Dollinger says he will treat his next case by ligature of the ophthalmic vein ; he thinks this might cause thrombosis in the cavernous sinus without resorting to the more serious operation of ligaturing the carotid.

REFERENCE.—[1] "Deut. Zeit. f. Chir.," vol. li., pp. 5 and 6.

EYE DISEASES (Electrotherapy in).

F. Richardson Cross, M.B., F.R.C.S.

Von Reuss' recommends for certain inflammatory conditions of the eye, applications of the **Faradic Current** lasting for fifteen to thirty minutes or even longer. In applying the treatment the closed eye is covered with a thick layer of damped absorbent wool, over which is fixed by means of strings a small oval electrode (40 mm. by 28 mm.) shaped like a mussel shell. To avoid wetting the strings it is best to attach

them to a lead plate, in the centre of which a hole is bored so as to allow of its fitting over the electrode and keeping it in position. The other electrode is held in the patient's hand.

The current, which is turned on gently at first, is gradually increased until the patient cannot conveniently bear it stronger, and during the the sitting it is kept just so powerful as not to cause actual discomfort.

Von Reuss has employed this treatment in iritis, irido-cyclitis, intra-ocular hæmorrhages, inflamed blind eyes, keratitis, and scleritis. He claims to have obtained the following results: (1,) In acute iritis and irido-cyclitis the pain is temporarily much relieved, while in several patients suffering from the recurrent form of these diseases threatened attacks were caused to abort: (2,) The absorption of fresh hæmorrhages into the aqueous chamber or into the vitreous appears to be promoted, but it is difficult to prove this owing to the rapidity with which such hæmorrhages sometimes disappear spontaneously; (3,) Pain in blind eyes due to inflammation in the uveal tract, or to increased tension can frequently be relieved: such eyes, however, should usually be removed unless the patient refuses to undergo the operation; (4,) In all forms of keratitis pain is relieved temporarily, and photophobia is much diminished, but there is no evidence of any definite influence upon the course or duration of the disease; (5,) In scleritis the action of the faradic current is not nearly so efficacious as that of the galvanic, which is strongly recommended. As the latter causes considerable irritation the eyes should always be well cocainised before commencing the application, which should not be undertaken without means of regulating and measuring the current.

It will be noticed that von Reuss uses almost entirely faradisation in preference to galvanisation, which requires more careful application and more accurate measurement. Alleman,[2] of Brooklyn, however, uses the constant current with considerable success. To facilitate the absorption of iritic exudations and encourage the breaking down of adhesions he places the cathode on the eyelid and employs a current of about 2 milliampères for five minutes, while for the relief of pain in acute iritis he applies the anode to the lids and uses a current of 1 milliampère for from two to three minutes. He states, however, that this will often prove of no avail.

REFERENCES.—[1] Von Graife's "Arch. für Ophthal.," Band 46, p. 398; [2] quoted by Percy Dunn, "Med. Press and Circ.," Feb. 1, 1899.

EYEBALL (Prominence of). *F. Richardson Cross, M.B., F.R.C.S.*

Dr. Walter Edmunds,[1] in a paper which he read at a meeting of the Ophthalmological Society of the United Kingdom, remarked that

the prominence of the eyes could be affected experimentally : (*a*,) By acting on the sympathetic, either stimulating it or dividing it ; (*b*,) By the administration of certain preparations or drugs ; (*c*.) By operations conducted on the thyroid gland. With regard to the first (*a*) stimulation of the cervical sympathetic produced : (1,) Prominence of the eye ; (2,) Widening of the palpebral fissure ; (3,) At first increase and later decrease of the intraocular tension : (4.) Erection of the hairs of the head : while division of the sympathetic produced the opposite effect. (*b*) Cocaine caused proptosis, widening of the palpebral fissure, dilatation of the pupil, and decrease in the intraocular tension. Cunningham had shown that feeding a healthy animal on thyroid extract produced similar results. Exophthalmos after the administration of thyroid had been observed in man by Beclère, where it appeared after excessive doses had accidentally been taken by a patient suffering from myxœdema. (*c*) The third method of affecting the prominence of the eyes was by operations on the thyroid. Removal of the thyroid might produce either exophthalmos or enophthalmos, but in the monkey the latter was most frequent. The author summed up his results by saying that the discussion of these phenomena was particularly interesting in its bearing on the pathology and treatment of Graves's disease ; the fact that the most important eye symptom of Graves's disease could be produced by the administration of thyroid preparations certainly suggested that the ocular affection was secondary to the goître. He had not tried the effect of division of the sympathetic combined with the administration of thyroid extract, but it diminished the effect produced by cocaine. Exophthalmos would thus seem likely to be benefited by division of the cervical sympathetic, and the operation had been tried several times in man, but the results were said not to be satisfactory so far as the general disease was concerned.

Treacher Collins[2] gives the results of a study of eleven cases of enophthalmos, five of them following some severe injury to the face, and six in which no history of such traumatism could be obtained. Of the non-traumatic cases two were associated with symptoms of paralysis of the cervical sympathetic (viz., contraction of the pupil and slight drooping of the lid). In one there was severe morphœa in the course of the right fifth nerve. Collins considers that there is little doubt that the process of sclerosis which had affected the skin and its subjacent tissue, had likewise implicated the cellular tissue of the orbit, perhaps as the result of some trophic nerve influence, and so caused sinking of the eyeball. In another patient with a definite history of an attack of syphilis followed by "a stroke," the enophthalmos was associated with slight ptosis on the same side, but the

pupil dilated under cocaine to the same extent as that of the sound eye and the case was diagnosed by Dr. Mott as one of syphilitic thrombosis of the pontine vessels. In the fifth case the enophthalmos was only present when the patient was standing, but on his stooping or compressing the jugular vein on the affected side the eye became proptosed. Reference is made to other cases similar to this one and it is stated that there is a general consensus of opinion that they are best explained by the presence of a new growth of the nature of angioma which has caused absorption of the orbital contents and consequent sinking of the eyeball, but that when the growth becomes engorged with blood by stooping or compression of the jugular vein the eyeball becomes proptosed. In the last of the non-traumatic cases the sinking of the eyeball was associated with markedly defective lateral movement of the globe, especially outwards, and slight defect in its vertical movements. Such cases are usually congenital, and Collins quotes one in which Heuck proved by *post mortem* examination that the defect depended upon abnormal shortness of the recti and their insertion too far back on the sclerotic. Collins suggests that in addition the check ligaments may be absent or inserted too far back on the walls of the orbit.

In dealing with the traumatic cases, Collins discusses the following theories which have been put forward to account for the symptoms, and compares them with his notes : —

(1.) *Lesion of Cervical Sympathetic.*—Schapringer has suggested that some of these cases may be due to a lesion of the cervical sympathetic, and he records one in which this seems probable. It was that of a little girl, aged seven, who struck her right temple against an iron grating. She did not lose consciousness, but bled from the nose and ear. Two hours later drooping of the upper lid and a sunken appearance of the eye were noticed. The ptosis was not due to paralysis of the levator, as the lid moved upwards in association with the globe. The pupil of the right eye was round, active, and equal to its fellow. The tension was diminished. The sensibility of the skin, its capillary circulation, and its temperature showed no difference on the two sides of the face. The day following the accident the symptoms had partly subsided, and two days later had entirely disappeared. The immediate onset of the enophthalmos and ptosis after the injury in this case, and its rapid disappearance, certainly suggest a temporary muscular paresis.

Schapringer says a small hæmorrhage involving the sympathetic root of the ciliary ganglion would explain all these symptoms. The diminished tension he attributes to secretory disturbance in the eye ;

and the non-affection of the pupil to the fact that the pupil dilator fibres do not pass through the sympathetic root of the ganglion.

In none of Collins's cases is it known that the enophthalmos came on directly after the injury, and in all of them it was permanent. In two of them there was ptosis due to paralysis of the levator palpebræ muscle, and in one of the others there was slight drooping of the upper lid. In one case the pupil is noted as being inactive to light, and only feebly active to accommodation, in all the others the pupils were active and equal.

(2,) *Atrophy of Orbital Contents from Injury to Sympathetic or Fifth Nerve.*—Beer, who has recorded two cases of traumatic enophthalmos, attributes the symptom to atrophy of the orbital tissues from lesion of the sympathetic or fifth nerves. In two of Collins's traumatic cases defect in sensation in the course of the fifth nerve was present, and in one of these which he was able to watch for some time, the anæsthesia over the face of the brow, at first complete, gradually disappeared. If we accept this explanation as the cause of the sinking of the eye, it is strange that enophthalmos is not a more frequent accompaniment of lesions of the fifth nerve.

(3,) *Shrinking of Orbital Contents of the Cellulitis.*—Gessner recorded from Nieden's clinic three cases of enophthalmos of traumatic origin, in all of which there had been penetrating wounds into the orbit, leaving scars at its margin. He suggests that the wound in these cases gave rise to inflammation of the cellular tissue and periosteum of the orbit, which led to contraction of its contents and consequent displacement backwards of the eyeball. The defective movements of the eye in some of the cases might also be accounted for by the implication of the muscles and formation of adhesions. Gessner, however, thinks they are more likely the result of laxity of the muscles due to the sinking of the globe.

In three of Collins's cases there were scars at the margin of the orbit, evidently following wounds penetrating the orbital tissues. In another, though there was no external wound, it is noted that extensive swelling followed the blow, which was a very severe one, and it is very probable that fracture of the walls of the orbit occurred, causing a communication between it and one of the neighbouring air sinuses, which resulted in an orbital cellulitis. The same explanation might possibly apply in the fifth case, which is a very exceptional one, in that the blow was received on the cheek of the side opposite to that on which the sinking of the eye subsequently occurred.

In two cases there was obvious defect in the movement of the eye-

ball, while in two others there was no apparent defect of movement, but in certain positions the patient saw double.

(4.) *Fracture of Orbital Wall.*—Lang attributes traumatic enophthalmos to fracture of the wall of the orbit, allowing increased space for the orbital contents, with displacement backwards of the eyeball by the pressure of the external air.

In two cases recorded by Becker and Tweedy an injury with a cow's horn seems to have driven the eyeball through the floor of the orbit into the antrum of Highmore.

In none of Collins's cases can the presence of fracture be excluded. In one there certainly was some fracture of the margins of the orbit, for several pieces of bone were removed.

In conclusion, Collins adds that though it is unnecessary to assume in traumatic enophthalmos that the sinking of the eye is always brought about in the same way, it seems to him that the five cases he has met with are best explained by the theory which attributes the sinking of the eye to the contraction of inflammatory products, the result of orbital cellulitis.

REFERENCES.—[1] "Trans. Ophthal. Soc.," vol. xx.; "Brit. Med. Jour.," Feb. 3, 1900; [2] Ibid., Sept. 30, 1899.

EYEBALL (Suppuration of). *F. Richardson Cross, M.B., F.R.C.S.*

Haab[1] recommends the introduction into the eyeball of **Sterilised Iodoform** for the treatment of threatened suppuration. The iodoform is prepared in the following manner: (1,) It is soaked for several days in a 3 per cent. solution of carbolic acid, during which time it is occasionally stirred about; (2,) The carbolic solution is poured off and the iodoform washed with sterilised water; (3,) Almost all the water is removed by evaporation; (4,) A small quantity of sterilised gelatine such as is used for culture media is added to the iodoform, and the resulting mixture is formed by means of a sterilised mould into sticks about 1·5 to 2 mm. in diameter. These are kept in sterilised vessels and when required for use, are broken into suitable lengths and introduced into the vitreous or aqueous chamber either through the wound caused by the original injury or through a cut made for the purpose. Haab considers that it is remarkable how well the iodoform is borne in the anterior chamber. He says that during the first days after its introduction it becomes surrounded with a fine layer of exudation which soon disappears again, that then the little roll becomes disintegrated at its edges and particles of iodoform may be deposited on the back of the cornea or on the capsule of the lens, like the exudation in serous iritis. Finally it disappears out of the anterior chamber after several weeks. Haab has treated by this method seven injuries by

penetrating fragments, four penetrating wounds, and six suppurations of which three followed cataract extractions, two started from old scars, and one complicated an ulcus serpens corneæ. In almost all these cases the favourable influence was most marked, and if Haab's experience is confirmed by other observers it would seem as if his method would prove a valuable means of treatment.

REFERENCE.—[1] "Trans. ixth Internat. Ophthal. Cong.," p. 425.

FALLOPIAN TUBES (Diseases of).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

Gonorrhœal Salpingitis.—Taylor's[1] observations on this subject are of great importance and should be read *in extenso*.

Strangulated Hernia of the Fallopian Tube.—A case of this rare condition is reported by Boudin.[2] The patient was fifty years old, and subject for five years to femoral hernia. It had not developed after any strain or violent muscular action. The rupture long remained reducible. The period was irregular, and often very painful. Ten days before operation the rupture became irreducible. The patient felt a little local pain, but was free from any gastro-intestinal symptoms. Jaboulay operated, and found the sac quite empty, except that it contained the Fallopian tube strangulated at the neck. As has been noted in previous cases, the ovary was not in the hernia.

Tuberculosis of the Fallopian Tube.—The frequency with which the tubes become secondarily affected with tuberculosis in cases of phthisis is illustrated in a report by Turner[3] on twenty-seven consecutive cases of phthisis in women where the pelvic organs were examined *post-mortem*.

Tuberculous lesions of an undoubted character, demonstrated by microscopical structure and the detection of the tubercle bacillus, were found in five cases (18·5 per cent.). In one of these the tubes alone were involved, in two the tubes and the body of the uterus; in one the tubes, body, and cervix of the uterus, and in one the tubes, body of uterus, and ovary were affected. In seven of the remaining cases there was evidence of interstitial or catarrhal salpingitis, and in several of these the condition was suggestive of a tuberculous origin, but no positive evidence to that effect was forthcoming. The author gave a detailed description of the lesions met with, and inferred that the usual form of tuberculous salpingitis appeared to be due to the entry of bacilli into the open ends of the tubes from the endometrium; infection through the blood supply probably also occurred, but much less frequently. The cervix was similarly affected. The ovary did not form the same nidus and was comparatively rarely diseased in these cases.

In none of the cases, as far as Turner knew, had the patients presented any symptoms referable to the lesions in the genital organs.

In the discussion on Turner's paper Doran referred to Kleinhaus's statement that the tube was the part of the female genital tract most often affected. In acute tuberculous salpingitis it appeared that the bacillus was found in abundance whilst giant cells were scanty : in the chronic form the giant cells were abundant and the bacilli scanty.

Conservative Treatment of the Tubes.—Some excellent results of conservative surgery are given by Bossi,[4] in a table of two hundred and eighty cases such as would by some surgeons be treated by removal of the appendages or uterus or both. By the adoption of "minor" procedures he has succeeded in saving the pelvic organs so that pregnancy followed in many cases.

Suppurative Disease of the Appendages.—Schatz[5] has been led to adopt conservative measures by his experience of the after-results of abdominal section. Of twenty cases, he only lost one by operation ; but he found that only 50 per cent. of those who recovered from the operation were cured. The remainder were characterised by invalidism or recurrence.

In acute cases he applies to the entire abdomen large compresses impregnated with equal parts of **Ichthyol** and **Lanolin ;** he also orders rest in bed, baths, and hot vaginal irrigations, at a temperature of from 45° to 50° C. One-half gallon of fluid is used at each irrigation, and the treatment is repeated twice daily. He has devised a speculum which protects the external hyper-sensitive parts from the hot solution. As a result of these irrigations the temperature usually dropped to normal in from four to eight days, the tenderness disappearing at the end of that time.

Davis[6] has been led to hesitate about operation by finding that many cases made symptomatic and even anatomical recoveries without surgical interference. He now uniformly advocates operation in two classes of cases : (1.) Those in which the amount of pus is large and tension great, where there seems to be danger of perforation into the peritoneal cavity, the bladder, or the rectum ; (2.) Those cases with profound sepsis, whether the amount of pus is great or small, in which the conviction is forced upon us that unless something is done to stop the septic absorption the patient is bound to succumb.

In such cases he considers that the best treatment is free vaginal incision and drainage. He admits that in five out of six cases so treated convalescence was prolonged over a period greater than in the average cœliotomy ; but he contends that safety is purchased cheaply at the price of two or three weeks longer in bed.

The relative merits of the abdominal and vaginal routes for operative treatment are still energetically discussed, each plan having its own warm supporters. L. & T. Landau, in Germany, were among the pioneers of the vaginal route; among its champions in America we may mention Pryor,[7] who has recently reported one hundred operations without a death, and who enters fully into the technique of the operation. In an earlier paper[8] he sums up some of its advantages. He is of opinion that in weighing the vaginal against the abdominal operation in pelvic inflammation the greater the degree of suppuration the less the indication for cœliotomy. For instance, in an old case of bilateral suppuration with repeated recurrences of peritonitis, or a case of diffuse suppuration, the indication is for either an evacuative operation through the vagina or else a vaginal ablation. Whenever there are more pockets than one he tries to enter all, and pack each with gauze, for if small ones are overlooked they break into the drainage space. The vaginal evacuation will remove the most critical case from the emergency class, and place it in the class where an elective radical operation can be done. The vaginal operation is the only one which admits of the retention of the ovaries, and consequently the preservation of menstruation when there are bilateral pus foci.

Hayd,[9] on the other hand, states the case for the abdominal operation. He thinks that vaginal operations in the pelvic cavity are more difficult to perform than through an abdominal opening. Vaginal surgery is necessarily less complete, and the dangers and risks of accident to important structures infinitely greater than in operation by abdominal section. For instance, the author has on several occasions delivered a large pus tube or ovarian abscess, and found that he had torn off the appendix vermiformis, or needed to remove it because it was so disorganised, and he had even found a long appendix adherent to the tube or ovary. Further, the possibilities and necessities for conservative surgery of the tubes and ovaries were out of the question when the operative procedure was by the vaginal route. The consensus of the best surgical thought of to-day is to leave the uterus when possible to support the lower abdominal segment. Only such portion or portions of the ovaries or tubes are to be removed as are irreparably diseased, so as to continue as long as possible the function of menstruation.

It is a curious fact that the grounds of preference for the one operation or the other are largely identical. This is instructively shown in the following comparison of the reasons for abdominal and vaginal operations given respectively by Baldy[10] and Johnson.[11] We

have altered the order of Johnson's reasons to emphasise the comparison :—

(1,) The operation is the safest in this particular class of cases or almost any other to which abdominal section is applied.

(2,) Shock rarely enters into the case as a serious sequel; never more so than in the vaginal operation.

(3,) Drainage is the exception; it is the rule in vaginal work.

(4,) Hernia occurs in not more than 1 per cent. of cases operated upon.

(5,) Women are not prone to complain of the abdominal scar.

(6,) The patient could arise from her bed and return to her home at as early a date as after the vaginal operation, were it considered advisable for her to do so.

(7,) A completed operation is always possible by the abdominal route; in a large percentage of the bad cases it is impossible by the vaginal route.

(8,) The technique of the abdominal operation is much more easy than that by the vagina.

(9,) There is less danger of damage to the hollow viscera by the abdominal route; if such injury does occur there is less danger of infection from such injury, and the damage is more readily repaired. As a matter of fact such injuries are impossible of repair by the vaginal route.

(10,) The mortality of the abdominal operation is all that could be desired, and no other major operation shows a better record.

(1,) See paragraph 10, below.

(2,) There is little or no shock.

(3,) Drainage being down-hill is not opposed by the laws of gravity, and is more natural, safe, and copious.

(4, 5,) There is no ugly scar to annoy the eye and develop a painful keloid or permit a ventral hernia.

(6, 8,) The vaginal section is very much more quickly done than the abdominal, and the convalescence is much shorter.

(7,) Experience has abundantly proved in more than a sufficient number of cases that the removal of the abscessed organs is not necessary to a symptomatic cure, and that a permanent and complete restoration to health is the rule, while a secondary operation later on is the exception.

(9,) The peritoneal cavity being seldom opened in these cases, except when hysterectomy is done at the same time, much less traumatism occurs to intestines, bladder, ureters, omentum, or abdominal wall, greatly to prolong difficult and dangerous operations.

(10,) The mortality of the vaginal operation for pus is vastly less than in that of enucleation of tubo-ovarian abscesses from above in the badly adherent and complicated cases.

REFERENCES.—[1] "Brit. Gyn. Jour.," Aug., 1899; [2] "Lyon méd.," June 18, 1899; [3] "Obst. Trans.," 1900; [4] "La Gynécologie," April 15, 1899; [5] "Cent. f. Gyn.," No. 6, 1899; [6] "Jour. Amer. Med. Assoc.," Feb. 4, 1899; [7] "Amer. Jour. of Obst.," May, 1899; [8] "Virginia Med. Semi-Monthly," Nov. 11, 1898; [9] "Buffalo Med. Jour.," Dec., 1899; [10] "Amer Jour. of Obst.," May, 1899; [1] Ibid., July, 1898.

FEVERS (Eye Complications in Acute Specific).

F. Richardson Cross, M.B., F.R.C.S.

The ocular affections occurring as complications or sequelæ of the various acute specific fevers are of great importance, for the preservation of the patient's sight may depend upon their early recognition and appropriate treatment. In a very exhaustive account of them, Flemming[1] points out that the eye may become implicated in the following ways: (1.) By direct inoculation, as when a variolous or vaccine pustule is scratched by a finger, which is then inadvertently applied to the eye; (2.) By direct microbic invasion from the skin, nasal cavity, or accessory sinuses, as in facial erysipelas affecting the conjunctiva; (3.) As part of a general catarrh, as in measles; (4.) By the action of toxins, the products of specific organisms circulating in the blood, and selecting particular structures on which to act; (5.) As a result of a lowered power of resistance to microbic invasion, a hæmorrhagic tendency, or a nerve weakness due to debility; (6.) As a secondary result of some other complication of the original disease, such as otitis media or nephritis.

Dealing with the fevers seriatim Flemming mentions the following complications and sequelæ as likely to occur:—

In *measles* there is always considerable catarrh of the conjunctiva, and corneal ulceration is frequent. To prevent perforation with prolapse of the iris and probable loss of the eye ulceration should receive early treatment by bathing with warm **Boracic Lotion** and the instillation of **Atropine Drops** (gr. 1 or 2 in ℥j) sufficiently often to keep the pupil well dilated. [If the ulcer be situated near the margin of the cornea, **Eserine** (gr. 1 in ℥j) may be used instead of atropine. — F.R.C.] Optic neuritis and suppuration in the orbit or in Tenon's capsule may also occur, but are much rarer.

In *whooping cough* ecchymoses of the conjunctiva may result from mechanical congestion, but are of no importance.

In patients suffering from squint a history is frequently given that the defect was first noticed during an attack of measles or whooping cough. Such squints are usually concomitant and associated with hypermetropia, but may in rare cases be paralytic and due to hæmorrhage into the sheath of a nerve, usually the sixth.

In *mumps* the lachrymal gland may possibly become involved in the glandular inflammation.

Scarlatina is sometimes accompanied or followed by conjunctivitis, while as direct sequelæ neuro-retinitis and transitory blindness have been recorded. As secondary sequelæ it is well known that albuminuric retinitis or uræmic amaurosis may result from nephritis,

while otitis media may give rise to optic neuritis or exudative retinitis.

Enteric fever sets up as a rule such ocular complications as would be expected to occur in so prolonged and debilitating a disease. The commonest of these are paralysis of accommodation accompanied by mydriasis (and thus distinguished from that following diphtheria), paralysis of one or more of the extrinsic muscles (causing squint and diplopia), keratitis, corneal abscess, and choroiditis. The corneal complications are common in those cases associated with prolonged coma vigil when they are due to desiccation, and should be guarded against by protecting the eyes with a pad and bandage. Obstruction to the retinal circulation due to embolism or thrombosis of the central artery or one of its branches has been noted, while optic atrophy may occur as a result of retro-ocular neuritis set up by toxic influences or by inflammation spreading from the nose and sphenoidal sinus to the nerve in the optic canal. On the other hand the occurrence of papillitis as a complication of enteric fever is so rare that its presence should always arouse a suspicion of meningitis and lead to an examination of the ears, the state of which may account for the condition.

Diphtheria may affect the eye by producing a membranous conjunctivitis either primarily or by extension from the nose through the nasal duct. This disease is characterised by great brawniness and infiltration of the lids (making an inspection of the cornea difficult), scanty discharge, and the presence of a definite membrane on the palpebral conjunctiva from which it cannot be easily detached. Early and energetic treatment is necessary to prevent, if possible, strangulation and sloughing of the cornea. Injections of **Antitoxin** are not only valuable for their effect upon the systemic infection, but also exert a definite influence upon the ocular lesion which may also be combated by washing out the conjunctival sac several times daily with a lotion containing **Quinine** (gr. iv ad ℥j, dissolved by a minimal quantity of sulphuric or other acid).

As sequelæ of diphtheria, even when the original attack has been of a very mild type, various ocular paralyses may occur. The commonest of these is one involving the ciliary muscle and causing loss of the power of accommodation: mydriasis or defects in the movements of the pupil are rare, but any of the extrinsic muscles (most commonly one or other externus) may be affected. Papillitis has been observed to occur during convalescence from diphtheria, and may lead to optic atrophy. These sequelæ should all be treated by rest and appropriate tonic measures. When the ciliary muscle is affected **Eserine** or **Pilocarpine Drops** (gr. 1 or 2 ad ℥j) may be prescribed to stimulate it, and glasses may be ordered if necessary.

During the acute stage of *influenza* conjunctivitis, corneal ulcers, or herpes may be present, while paralysis of the ciliary muscle or of one or more of the extrinsic muscles, retro-ocular neuritis or papillitis with or without subsequent atrophy of the optic nerve, effusion into or suppuration in Tenon's capsule, orbital cellulitis or abscess, central retinitis or chorio-retinitis, and panophthalmitis have all been recorded.

In *small-pox*, apart from the formation of vesicles on the eyes, there may be simple or purulent conjunctivitis, keratitis or corneal ulceration, the latter of which may lead to perforation of the cornea followed by prolapse of the iris and loss of the eye.

Chicken pox is often accompanied by conjunctivitis.

A vaccination pustule may form on the eye as the result of direct inoculation. This accident may also occur to some of the attendants or friends of the patient.

In *erysipelas* the lids may become so swollen as to cause loss of the eye from pressure, or they may become gangrenous, leading to subsequent ectropion. The inflammation may spread to the orbit, giving rise to orbital cellulitis or abscess, associated at times with extreme exophthalmos, and by involving the sheath of the optic nerve, cause neuritis and atrophy. It may also spread backwards to the meninges and venous sinuses, and reach the other orbit by way of the circular sinus. In some cases of erysipelas suppuration confined to Tenon's capsule has occurred, while in others hæmorrhagic retinitis has been observed as a result of thrombosis of the retinal veins.

REFERENCE.—[1] "Brit. Med. Jour.," April 29, 1899.

FIBROMYOMA OF THE UTERUS. (See "Uterus.")

FISSURE OF ANUS. (See "Anus.")

FOOT (Amputation of). *Priestley Leech, M.D., F.R.C.S.*

J. Hutchinson, junr.,[1] advocates, when practicable, the performance of the subastragaloid amputation in place of Syme's amputation. Farabœuf's method is the best. The advantages of this operation over Syme's are: The stump is two inches longer; it gives a broader base of support; the elasticity, due to the ankle movements, has a marked advantage in walking; the pad of soft tissue at the end of the stump is thicker; the arterial supply of the flap is better; an artificial leg can be better fitted to the stump. Syme's amputation could sometimes be done when there was not enough tissue for a subastragaloid amputation.

REFERENCE.—[1] "Brit. Med. Jour.," Aug. 25, 1900, p. 606.

FRACTURES. *Priestley Leech, M.D., F.R.C.S.*

The operative treatment of simple fractures is still under discussion. Arbuthnot Lane[1] brings forward again his views on this subject. He draws attention to the fact that in fracture of the tibia and fibula, even if the anterior superior spine, the middle of the patella and the ball of the great toe are in the same line, it is no proof of the accurate apposition of the fragments, because the position of the great toe can be so readily altered by even slight adduction of the foot and because of the free mobility of the overlapping ends on one another. He draws attention to the conflicting advice given by various surgical authorities. His conclusion as regards treatment is "that in every simple fracture in which it is important to the individual that the original form of his skeleton shall be retained and his mechanics suffer no alteration, the surgeon should, *failing to obtain accurate apposition as determined by the radiograph*, cut down on the seat of fracture and restore the bone or bones to their original form." This is particularly important in the case of the leg.

The hypothesis formerly held, that it was muscular contraction that prevented accurate apposition of the fragments, has been proved to be incorrect since operations have been undertaken in simple fractures. These operations have been in many cases difficult, and the difficulty of replacement varies directly with the amount of hæmorrhage and with the degree of subsequent inflammatory processes.

The form of fracture also is another element in the difficulty of replacement in fractures of the leg. The transverse and oblique fractures of the tibia and fibula, due to direct violence, are, as a rule, much more easily reduced than those due to indirect violence where the fracture is almost always spiral in character and due to torsion of the two bones usually around their long axis in the direction of abduction of the foot, the fibula being broken at a higher level than the tibia. In the latter instance Golding-Bird[2] has proved that it is the fibula which is often an obstacle to accurate replacement of the broken ends of the tibia, and he advises that where difficulty is experienced in getting correct apposition in spiral fractures, the fibula be also cut down upon and its ends placed in apposition, and it is this "spring action difficulty" (with the fibula being twisted in the same direction as the tibia and tending to keep up the original twist) that hinders the reduction of the riding fragment and tends to reproduce deformity after reduction unless the fragments be wired. Golding-Bird says, in his opinion, operation is called for in simple fractures of the leg when the riding fragment threatens to become compound, or where there is shortening, or where the foot cannot be

placed in its proper line and retained there ; operation to obtain an absolute linear adaptation of the shin bone that will stand the test of the skiagraph is, he thinks, not justifiable.

Griffiths, of Cambridge, specially drew Golding-Bird's attention to the spiral fracture which the former believed to be the most common form of fracture ; Golding-Bird believes that he is right so far as the tibia is concerned, and Shenton, who has been radiographing every form of fracture at Guy's says, by far the greater number are spiral in character. The diagnosis as to whether a fracture is spiral or oblique in character is not always easy, and operation is called for not because we can say it is such and such a fracture as by failure accurately to adjust it by the various non-operative and manipulative methods at our disposal. Another advantage gained by operation is that the effused blood is removed and subsequent stiffness from this cause is lessened.

Steinbach [3] reports four cases of fractured tibia where he used silver plates, one-sixteenth of an inch thick, three and a half inches in length aad three-fourths of an inch wide with perforations for the screws one-half inch apart. An incision slightly larger than the plate is made and after removal of spicules, blood clot, etc., the periosteum being disturbed as little as possible, the fragments are placed in position and two screws placed in each end after holes have been made, by a drill rather smaller than the screws. The removal of the plate may be done under local anæsthesia after bony union has taken place. Clayton-Parkhill's clamps are also recommended. Massage is recommended after the third week.

Bennett [4] again draws attention to the use of massage in recent fractures and dislocations (see *Plates II, III, IV*, the photographs for which were kindly lent us by Dr. L. Creasy). There is no doubt that this method of treating recent fractures is too much neglected in this country. The drawback is that, if carried out thoroughly, it needs more or less skilled assistance and more time in the first part of the treatment, although time is saved to the patient, as he gets about sooner with a useful leg. He particularly recommends it from the beginning in intra-capsular fracture of the femur, as it allays the pain and spasm ; smooth rubbing for two days and then passive motion. The most important point in the use of passive motion in recent fractures is this : Passive movement should always be preceded by smooth massage which soothes the irritable muscles so completely that movements of the most complete kind are readily carried out without exciting muscular contraction of a harmful kind. Fractures in the vicinity of the shoulder joint are best treated by passive motion

PLATE II.

MASSAGE IN RECENT FRACTURE OF THE LEG.

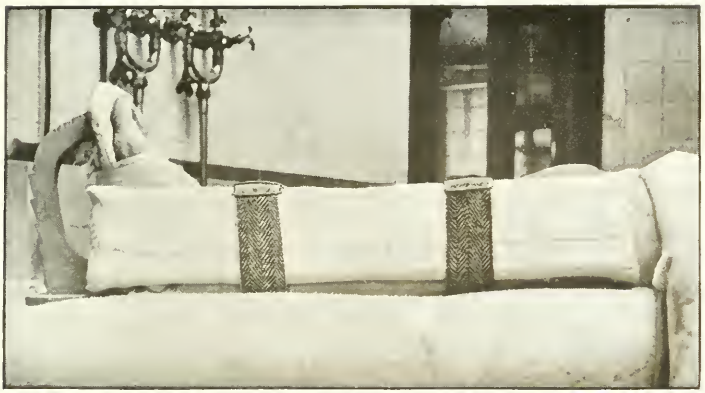

Fig. A.—THE FRACTURE SET.—The limb is secured on a back-splint, with a slightly oblique foot-piece, by bandages at the ankle and knee. Side-splints fixed by webbings or straps complete the fixation of the fracture.

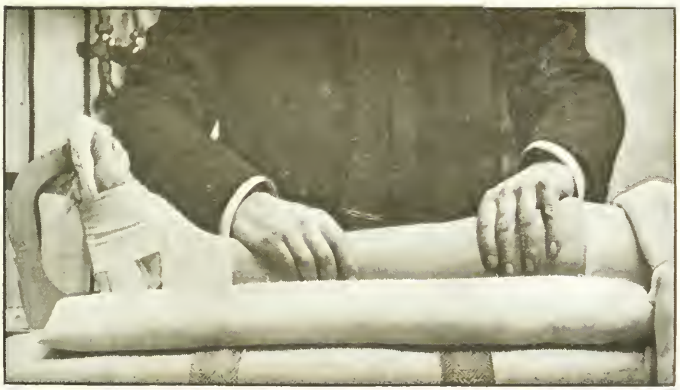

Fig. B.—IMMEDIATE SMOOTH RUBBING.—Commence at any time, the sooner the better after the fracture has been "set." The straps fixing the side-splints are unfastened and the splints are allowed to fall away from the limb. The knee is then steadied by one hand of the manipulator whilst smooth gentle rubbing from the foot upwards is effected by the other hand, which is made to grasp as much of the circumference of the limb as possible. The time required is from five to ten minutes. The objects are the relief of muscular spasm and rapid absorption of effused blood, etc. At the end of this stage the side-splints are replaced, leaving the parts in the condition shown in *Fig. A*.

PLATE III.

MASSAGE IN RECENT FRACTURE—*continued.*

Fig. C.

Fig. D.

Figs. C, D.—COMMENCEMENT OF INTERNAL MASSAGE.—After preliminary smooth massage, as shown in *Fig. B*, one hand of the manipulator is insinuated between the toes of the affected side and the foot-piece of the splint (*Fig. C*). Dorsal flexion is then effected as much as possible by rotating the hand forwards and downwards (*Fig. D*). This movement is repeated from five to ten times, the fracture being steadied by the grasp of the other hand of the manipulator. This stage may be commenced any time after the second day. The objects are early slight movement of the flexor tendons at the back of the ankle to prevent adhesions. Movements of the toes separately instead of *en bloc* may be substituted at discretion. At the end of this stage the side-splints are replaced as in *Fig. A*.

MASSAGE IN RECENT FRACTURE—*continued.*

Fig. E.—INCREASE OF INTERNAL MASSAGE.—After the usual preliminary smooth massage the bandage fixing the ankle is removed, leaving the limb secured above by the bandage at the knee and at the seat of fracture by the grasp of one hand of the manipulator. The other hand is insinuated between the sole and the foot-piece of the splint and firmly but gently grasps the foot and makes passive flexion at the ankle as freely as possible five or six times without moving the fractured bones. This stage may be begun any time after the fourth day, but may in difficult cases have to be postponed as late as the eighth or even the tenth day. The object is movement of the ankle-joint and muscles at the back of the leg and the calf to prevent adhesions, especially at the posterior aspect of the fracture. At the end of this stage the splints are replaced as in *Fig. A*.

Fig. F.—INCREASE OF PASSIVE MOVEMENT AND COMMENCEMENT OF COMPLETE MASSAGE.—The back-splint is now dispensed with, the fracture being fixed by means of side-splints straight or with foot-piece (Cline's). These having been removed the limb is laid on the bed or couch and complete ordinary massage is applied for fifteen minutes. Unless the union is very firm the fracture is then fixed by two short splints or, better, by a moulded poroplastic or leather splint. Passive movements of the ankle and knee are then made in the manner shown. The flexion at the knee not only prevents stiffness of that joint but allows more free internal massage by relaxing the calf muscles. May be commenced any time after the fourteenth day, according to the state of the union.

and smooth massage from the beginning; to and fro movements being made but not movements of rotation until a fortnight has elapsed. The only apparatus used besides, being a felt cap over the shoulder and a sling for the arm. With the ordinary treatment by splints very commonly a stiff joint results, much more commonly than most surgeons think. The great advantages of using massage are: (1,) Relief of pain and muscular spasm; (2,) The rapid absorption of effused blood; (3,) Prevention of stiffness by obviating the formation of adhesions; (4,) Prevention of muscle wasting and the preservation throughout the case of the normal nutrition of the limb; and (5,) The shortening of the time by at least half during which the patient is prevented from resuming the ordinary use of the limb.

In cases of fractured patella and olecranon, where operation is not advisable, intelligent massage and manipulation will give better results than treatment by splints.

There was a prolonged discussion at the French Surgical Society[5] on skiagraphy in fractures. Lucas Championnière says that the X-rays have confirmed an opinion that he has long held that the actual deformity is much greater than is externally apparent. If the direction of the limb is maintained the performance of its functions depends more especially on the preservation of non-atrophied muscles. of the mobility of the articulations, on the solidity of the ligaments, and the absence of tearing. The information yielded by radiography may give rise to serious errors of interpretation. In some cases a fracture has existed and has not been revealed by the X-rays, in some cases the mass of callus is shown much larger than it really is, and thickening of a bone may be shown where there is no fracture. It is often forgotten that a radiograph is not the result of a reflected image like a photograph is, but the result of the projection of opacities untraversed by the light. The volume, dimensions and even the form of the projected shadows vary with the distance of the object from the plate and also with the distance of the object from the source of light; any obliquity of the light, unless allowed for, may give rise to serious errors. Lucas-Championnière also preaches massage and early passive movement in the treatment of fractures.

REFERENCES.—[1] "Lancet," May 26, 1900, p. 1,489; [2] "Brit. Med. Jour.," April 21, 1900, p. 945; [3] "Ann. of Surg.," April, 1900, p. 436 and p. 508; [4] "Lancet," June 2, 1900, p. 1569, and June 9, 1900, p. 1640; [5] "Bull. et Mém. de la Soc. de Chir.," Jan. 2, 1900; "Rev. de Chir.," Feb., March, and April, 1900.

FURUNCULOSIS.

Synopsis.—(Vol. 1900, p. 209). Fresh brewer s **Yeast**, 3 to 9 teaspoonfuls daily. Mopping **Bichloride of Mercury**, 1 in 500 solution, twice daily on broken skin surrounding furuncles. **Poultices** should be made with antiseptics. **Boric Acid** fomentations are useful. The wound may be irrigated with weak **Bichloride of Mercury Solutions**. **Tincture of Iodine** locally in early stage. Salzwedel's **Alcoholic Dressings** (really an alcoholic compress). **Alcohol, Benzoic Acid**, and **Salicylic Acid** inhibit growth of staphylococci, *e.g.*, salicylic plaster, 50 %. Furuncles on face are punctured with **Galvano-Cautery**, the slough removed with sharp spoon and cavity filled with salicylic acid and covered with salicylic plaster. Small furuncles are sponged with alcohol or 2 % salicylic or benzoic acid solutions.

GALL-BLADDER (Surgery of). (See "Liver.")

GALL STONES IN YOUNG CHILDREN. (See "Liver.")

GASTRALGIA.

Synopsis.—(Vol. 1900, p. 492). **Fowler's Solution** 1 drop doses after meals.

GERMAN MEASLES. (See "Rubella.")

GINGIVITIS.

Synopsis.—(Vol. 1900, p. 442). Removal of tartar from teeth. Packing the pockets in the gums with **Cupric Sulphate** in powder, and as a mouth-wash, R Ac. Carbol., ♏4; Sod. Bicarb., gr. 10; Pot. Chlor., gr. 10; Glycerin, ʒj; Aq. Menth. Pip., ʒj.

GLYCOSURIA. *Prof. R. Saundby, M.D., LL.D., F.R.C.P.*

Saundby[1] points out that people who have accumulated a thick layer of adipose tissue seem to possess a diminished power for consuming sugar, and this reduction becomes more marked as they get older. It is, therefore, easy to explain glycosuria in fat, elderly men and women, and everybody knows how commonly it is seen in such persons. In these cases a little glycosuria from time to time is almost normal or quasi-normal, so that we ought not to be unduly surprised or alarmed at its presence, and should have no difficulty in explaining it to our patients. No doubt the presence of sugar in the urine points to the readiness with which hyperglycæmia can be induced, and if such an individual continues to eat abundantly of carbo-hydrate food there may be a further reduction of sugar-consuming power with resulting mild diabetes, but the symptoms are readily controllable and should not give us any real cause for anxiety. If such glycosuria occurs in early life, when the normal rate of sugar-consumption is high, it undoubtedly indicates a failure of the power to store and consume sugar, which may make us uneasy as to the patient's future, but our clinical experience of these cases is too recent to afford us the data for expressing a positive

opinion upon their chance of developing diabetes. In all these cases the cause of the glycosuria is the want of proper proportion between the supply of carbo-hydrate food and the sugar-consuming power of the tissues, but in the various other forms of non-diabetic glycosuria there is some pathological agency which affects the glycogen-storing function of the liver, either through the nervous system, or the stomach, or the pancreas, or by directly attacking the liver itself.

The very interesting, large, and important group of cases in which abuse of alcohol is the real cause of the glycosuria, does not deserve to be classed apart for any other reason than its known etiology. Probably the alcohol acts directly upon the liver, and the glycosuria is the result of the functional derangement caused by it. In many instances the liver has been enlarged, but where no such physical change can be noted it is reasonable to infer that there may be functional disturbance. From a pathological point of view I should class the gastric, hepatic, and alcoholic cases under one head, and attribute them all to the disturbance of the liver caused by alcohol or other irritating ingesta, or possibly by the products of fermentative or putrefactive changes in the contents of the stomach or intestine.

The glycosuria of gout is for the most part the alimentary glycosuria of elderly, fat persons, and I am not convinced that the condition ever demands any other explanation. That which follows falls and injuries or lesions of the nervous system, such as cerebral apoplexy, has been already made sufficiently clear by analogy with the experimental lesions which occasion the sudden discharge of the accumulated liver glycogen. Where neurasthenia exists the glycogen-storing function of the liver appears to be permanently depressed, so that hyperglycæmia and symptoms of diabetes may follow. The influence of boils and carbuncles, ulcers, gangrenous sores, and many infectious diseases, especially influenza, in causing glycosuria, seems to depend upon some products of the growth of the micro-organisms associated with these conditions. As a rule, this glycosuria lasts only so long as the infectious process, and disappears when the fever comes to an end. We do not know the channel through which these poisons act, but it is quite conceivable that they attack the liver directly; it is, however, equally open to us to assume that the nervous system or the pancreas suffers primarily. Whichever it may be, we are justified by the transitory character of the glycosuria in supposing that the poisons usually produce only functional effects, but as there are cases of diabetes which seem to have originated from attacks of infectious diseases we must also admit that occasionally it possesses the power of producing permanent mischief. As the most marked lesion known

to be capable of producing permanent glycosuria is wasting of the pancreas, and as there is no satisfactory explanation of its occurrence, we may be permitted to think that the products of infection at certain times favour the development of inflammations of the pancreas, just as we know they give rise to analogous inflammations of the kidneys or of the liver. We know so little about the true pathology of malignant disease that it is useless to speculate upon the cause of the glycosuria which sometimes occurs, particularly in cases of abdominal cancer. If we may accept as probable the microbial origin of cancer, this form would fall under the preceding section. Lastly, senile glycosuria, in all probability, merely depends upon the greatly reduced capacity of the aged body to consume sugar.

REFERENCES.—[1] "Practitioner," July. 1900; "Brit. Med. Journ.," April 14, 1900.

GLYCOSURIA AND PREGNANCY. (See "Pregnancy.")

GOITRE (Exophthalmic). *W. Milligan, M.D.*

Pitres[1] recommends the injection of an **Iodoform Solution** in ether. He injects 1 cubic centimètre into the tissues of the goitre at intervals of about eight days. The pain produced by the injection is acute, but is of only short duration, and shortly after the first injection nervous symptoms cease, sleep returns, the gland hardens, and the exophthalmos disappears.

For the vascular erythrism which so frequently is found in cases of exophthalmic goitre Dieulafoy[2] recommends the following :—

℞ Pulv. Ipecac. grs. xxx | Ext. Opii grs. iv
Pulv. Digitalis grs. xv |
Ft. pil. div. in 50.

Sig.—Two to four pills per diem.

Kant[3] has found good results from the employment of **Duboisine.**

℞ Sulphate of Duboisine gr. $\frac{1}{120}$ | Water ♏ xxx

To be taken two or three times daily.

REFERENCES.—[1] "Lancet," Aug. 1899; [2] "Med. News," Feb. 25, 1899; [3] "Revue Méd.," Dec., 1898.

Græme M. Hammond, M.D., New York.

Curtis[1] reports a case of Graves's disease apparently cured by **Thyroidectomy.** She presented the usual classical symptoms. He had removed the left half of the thyroid gland. Primary union followed and improvement had been progressive since that time; she was able to return to her employment in two months. Three years had elapsed since the operation and there had been no return of the

symptoms. He also reported another case in which he removed the cervical sympathetics, leaving the goitre untouched. There had been an improvement in all the symptoms. The author said he had performed thyroidectomy nine times. Of these six recovered and three died. In all the fatal cases there had been the same train of symptoms, rapid pulse and respiration, and high temperature.

At the June meeting of the New York Neurological Society, Dr. M. P. Jacobi [2] reported a case of Graves's disease successfully treated by **Intestinal Antiseptics.** The patient was twenty years old when the first symptoms of the disease appeared. Medicinal treatment having failed to improve her condition disinfection of the intestinal canal was inaugurated with gratifying results. For a long period bismuth, salicyl, and beta-naphthol were given associated with a daily flushing of the colon with two quarts of water. Previous to this the toxicity of the urine had been ascertained by Bouchard's method and the toxic co-efficient was found to be 5·79. Repeated examination showed a gradual reduction in the toxicity until at the end of three months it had been reduced to ·432 or nearly normal. For eleven months the pulse remained at 120, then fell to 100, and finally to 90.

In the discussion of this case Fisher said he did not absolutely agree with Jacobi in the efficacy of intestinal antiseptics. He had had success with **Strophanthin** continued for a long time. Porter had recently seen two cases treated by intestinal antisepsis and thought better results were obtained than by any other method. Caswell had given 15 grains three times daily of **Glycerophosphate of Sodium** with very beneficial results. The pulse had fallen from 130 or 140 to 84 or 88 and had remained so for the past two months. All constitutional symptoms were very much improved, although the exophthalmos had not disappeared, nor was there any decrease in the size of the thyroid.

Herrick [3] states that he has seen successful results from the administration of doses of $\frac{1}{500}$ of a grain of **Hyoscine Hydrobromate** continued for a considerable length of time, and from $\frac{1}{200}$ to $\frac{1}{100}$ of a grain of **Picrotoxin.**

Gordon [4] seems to favour operations on the sympathetics, believing that all the symptoms of this disease arise from permanent irritation of the vaso-dilator nerves. If there is mechanical pressure on the sympathetic it must be removed, and if the symptoms persist the sympathetic must be operated on. If the disease results from the reflex influence of some remote affection, as fibroid uterine tumours, nasal polyps, etc., these must be removed; and if the symptoms do not disappear the sympathetic should be operated on. If spinal or

other organic disease cause the symptoms operation should not be attempted. He believes that extirpation of the hypertrophied gland should never be performed. Medical treatment may be used if the patient refused to submit to an operation on the sympathetic, but he does not consider it of any particular value.

REFERENCES.—[1] "Jour. Nerv. and Ment. Dis," July, 1900; [2] "Med. Rec.," Sept. 22, 1900; [3] "New York Med. Jour.," June 16, 1900; [4] "Med. Rec.," Oct. 6, 1900.

Priestley Leech, M.D., F.R.C.S.

G. Rembach [1] gives the result of removal of the thyroid in Graves's disease. Nearly a decade has passed since Mikulicz, of Buda Pesth, did his first case, and the final results are good. The palpitations, attacks of giddiness and confusion, flushings and feelings of heat, have been entirely or almost entirely removed by the operation. A review of eighteen cases operated on with beneficial results is given. Microscopic examination of the excised glands showed slight and variable changes; no constant pathological basis could be discovered.

J. Berry [2] gives notes on seventy-two consecutive cases of removal of goitre by operation. In thirty-three cases extirpation was performed and in thirty-nine cases enucleation; it must be remembered that enucleation can only be performed in suitable cases (in cases of localised cystic or solid tumour within the gland) and many goitres cannot be treated without great risk by enucleation. Deformity alone is not a sufficient cause for extirpation; dyspnœa almost always demands operation, and extreme dyspnœa caused by innocent goitre should almost invariably be treated not by tracheotomy but by removal of the goitre. There are two kinds of goitre that are particularly dangerous to life through their great liability to cause sudden and dangerous dyspnœa: one is the rapidly growing parenchymatous (and of course bilateral) goitre occurring in young people about the age of puberty; the other kind is that in which a unilateral tumour is situated so low in the neck that it tends to become jammed in the upper opening of the thorax. These latter by becoming displaced or by suddenly increasing in size from internal hæmorrhage may cause most grave symptoms; from the small size and little prominence of the goitre they are very liable to be overlooked and the cause of the dyspnœa is sometimes considered to be merely asthma. Dyspnœa may be caused by a small tumour projecting from the back of the gland and pressing on the trachea. With regard to the anæsthetic, Berry says that when dyspnœa is severe there is great risk in giving a general anæsthetic and this is

especially dangerous when the tumour is being lifted out of its bed. Another advantage of operating under cocaine and morphine is that the retching and vomiting are saved, and these tend to cause venous hæmorrhage which interferes with primary union. The oblique incision along the border of the sterno-mastoid is the best for most cases. In young people especially, all longitudinal and oblique incisions have the disadvantage that they tend to become, after a time, contracted, thick and ugly ; a transverse incision leaves a better scar, but it gives the operator much less room, and unless the tumour is small it may necessitate the division of the infra-hyoid and even sterno-mastoid muscles. Of the thirty-nine enucleation cases there was no death ; out of the seventy-two cases three died, one from chloroform and in the other two cases the goitres were large and one had valvular heart disease. Drainage was resorted to for the first twenty-four hours. (Since this paper was written he has operated on twenty more cases without a death.)

Reinbach[3] gives the experiences of the surgical treatment of benign goitres in Mikulicz's clinic. Mikulicz practises a typical operation for all benign goitres as follows : Y-shaped incision (Kocher), vertical division of the fascia, ligation of the superior thyroid vessels, division of the isthmus ; ligation of the inferior thyroid artery if necessary, and then he excises a large wedge-shaped piece of the gland and sutures the wound in the remains of the gland and the capsule, and then drains the wound. During the last two years he has used the curved incision which Kocher recommends ; the cosmetic advantages of this incision are undoubted and, unlike the incisions which are made lengthways, this transverse, curved (collar) incision can be easily hidden by a neckband or necklace ; a consideration where low dresses are worn.

The advantages of this method are :—

(1,) It is the most physiological method, as the gland is diminished in size and not removed.

(2,) The operation avoids the two greatest dangers of thyroidectomy, viz., hæmorrhage and wounding of the recurrent laryngeal.

(3,) It can be used in all cases of innocent goitres and it is certainly preferable to extirpation of one half of the gland.

In cases where respiratory trouble forbade a general anæsthetic Schleich's solution was used and not cocaine. In some cases the patients still feel pain even if Schleich's solution is used.

REFERENCES.—[1] "Deut. Med. Woch.," April 26, 1900 ; "Lancet," June 23, 1900, p. 1,815 ; [2] "Brit. Med. Jour.," p. 3, July 7, 1900 ; [3] "Beiträge z. klin. Chir.," Band xxv, Heft 2.

GONORRHŒA. *J. W. Thomson Walker, M.B., F.R.C.S.*

TREATMENT.—The germicidal action of inorganic salts of silver, mercury, etc., is robbed of much of its value by the affinity of these bodies for the cell-protoplasm whereby the tissues of the individual are damaged and the power of the antiseptic reduced, and it is in recognition of this fact that organic compounds of these metals have been introduced, for their coagulative action on cell-protoplasm is less, while their germicidal properties are retained.

Mercurol, introduced by Dr. Schwickerath, is one of the most recent additions to the increasing list of these compounds, and is a combination of mercury with nuclein, containing about 10 per cent. of the metal. Frayley[1] reports upon fourteen cases of acute gonorrhœa treated by solutions of mercurol in normal saline solution. A solution of ½ per cent. strength (equal to 1 in 2,000 of bichloride of mercury) was used in most cases, while in a few a 1 per cent. and even 2 per cent. solution was found necessary. The injections were made by the patient himself every two hours, and the solution retained for two minutes.

In no case was any irritation produced. The best results were obtained in cases of anterior urethritis, the effect of the drug being less satisfactory where the posterior urethra was involved.

The discharge, after forty-eight hours' treatment, was completely stopped in three cases (20 per cent.); considerably lessened in seven (50 per cent.); and not perceptibly lessened in four; an improvement, therefore, in 70 per cent. of cases. There was prompt and complete relief of the urinary symptoms in all except two cases. The following were the results obtained: Six cases (43 per cent.) were cured in less than four weeks; three (21 per cent.) "practically cured" (with only a "morning drop" and no gonococci on three examinations) in three weeks; three distinctly improved in sixteen days, and two showed no improvement at all.

Dokoutschaieff[2] has recently reported on the use of **Dermatol** (Bismuthi subgallas) in nineteen cases of acute and chronic gonorrhœa. In acute cases where the whole urethra is affected the canal is first irrigated with a tepid solution of boric acid or weak permanganate of potash, and an emulsion of dermatol (dermatol 30 grains, gum arabic powdered 30 grains, distilled water 1 ounce) is then introduced by means of a Guyon's syringe, first into the posterior and then into the anterior urethra. The emulsion is retained for five minutes and allowed to escape drop by drop. These instillations are repeated every two hours. If the anterior urethra alone be affected, only that part of the tube is treated at first, but after thirty-four days injections into the posterior urethra also are made. In cases of chronic

urethritis an ointment (dermatol 0·6 centigramme, lanolin 10 grammes, white wax 2 grammes) is preferable. The urethra is first irrigated and then a bougie anointed with the pomade is introduced as far as the neck of the bladder. With the instrument *in situ* the urethra is now gently massaged. At first a few minutes suffice, but later the séance lasts twenty minutes. The results have been on the whole good. Acute cases were cured in eight to forty-six days, and chronic in nineteen to forty-three days. Epididymitis complicated three cases; four acute cases out of nineteen became chronic; and three chronic cases out of eleven derived no benefit.

Barrieu[3] obtained a cure in at most fourteen days in twelve cases of acute gonorrhœa treated with injections of **Iodoform Oil** (iodoform precip. 10 grammes, oil of sweet almonds 60 grammes, essence of peppermint 3 drops) used thrice daily. No pain or inflammation resulted from the injections.

Thomas,[4] Nosotti,[5] Barrieu, Garrow,[6] and Rix[7] all advocate the use of **Protargol** in acute gonorrhœa. The latter uses it in the form of a bougie 2½ to 4½ inches long. He first administers a smart purge, then at night, after emptying the bladder, a bougie is introduced and left in for an hour. If possible micturition is avoided until morning. In the morning a second, and at night again a third bougie is used. On the second day a mild astringent injection is given, and repeated two or three times.

See also "Arthritis" and "Epididymitis."

REFERENCES.—[1] "Therap. Gaz.," Nov. 15, 1899; [2] "Med. Obos.," No. 2, 1900; [3] "Thèse de Paris," Dec. 7, 1898; [4] Ibid., Jan. 21, 1899; [5] "Gaz. Med. Lombard," Aug. 7, 1899; [6] "New York Med. Jour.," April 28, 1900; [7] "Med. Rec.," Dec. 2, 1899.

C. F. Marshall, M.D., F.R.C.S.

Prof. Finger[1] divides the drugs for gonorrhœa into three groups: (1.) Simple disinfectants—*protargol* and *largin*; (2.) Antiseptic astringents—*silver nitrate*, *argentamin*, and *argonin*: (3.) Simple astringents, such as *zinc sulphate*, *permanganate*, and *alum*. The second group of antiseptic astringents have been found to be ineffectual in the acute stage, because at this time the gonococci are in the deeper layers of the epithelium, and below it in the sub-epithelial tissue, as well as in the urethral glands and lacunæ. These parts are not penetrated by this group of drugs, which simply produce an albuminous layer of coagulum on the surface, beneath which the cocci go on proliferating. **Protargol** is the best drug to begin with in Finger's opinion. A 0·25 per cent. solution is injected with a 12 c.cm. syringe every eight hours, each injection being retained ten minutes. After five or six minutes

the sphincter relaxes and the fluid reaches the posterior urethra, but when this is not required, three separate injections of three or four minutes each are made. After three or four days the strength is increased to 0·5 per cent., and afterwards to 1 per cent., or **Largin** of the same strength may be used instead.

Largin is not quite painless like protargol, but its penetrating power is greater. By this treatment, at the end of about a week, the acute stage is usually cut short, and during the second week astringents may be used as well as disinfectants. Finger points out, however, that in spite of the action of protargol and largin on the gonococci, a considerable number of organisms remain beyond the reach of any known remedies, and an ideal remedy has yet to be found. The newer method, however, appears to diminish the chances of extension to the posterior urethra, besides cutting short the acute and painful stage. Finger states, that if acute gonorrhœa is allowed to run its course, the posterior urethra is affected in 70 to 80 per cent. of cases; when protargol is used in about 40 per cent. and with largin only 27 per cent. Although the acute stage is shortened the total duration remains about the same as under the older methods, viz., five or six weeks, according to Finger. In addition to local treatment, Finger also uses sandal oil internally from the first.

A. E. Garrow[2] considers abortive methods of no value unless cases are seen very early. Bodily rest, low diet, avoidance of stimulants, and cool sleeping rooms are of great value. For local treatment the author prefers copious irrigations, with weak antiseptic solutions, **Perchloride of Mercury** or **Permanganate of Potash**. These are used in large quantities, and at a temperature of 115° to 120° F. It matters little whether they are applied by meatus nozzles, or glass or rubber catheters. Each irrigation is followed by an injection of **Protargol**, ½ to 2 per cent., which should be retained for fifteen to thirty minutes. This treatment should be begun at once, if possible, and carried out twice daily for the first few days, afterwards daily as long as the discharge contains gonococci. When the discharge becomes thin a combined vegetable and mineral astringent injection is used by the patient. These results are more satisfactory than when the whole treatment is done by the patient. The author also recommends **Salol** (gr. 10 ter die) internally with or without cubebs. Copaiba and santal wood are of little value in the author's opinion. In anterior urethritis, granular patches, and inflamed follicles, when they occur, should be treated with **Silver Nitrate**, followed by 25 to 40 per cent. **Boroglyceride**. Posterior urethritis, when acute, should be treated by rest in bed, hot hip baths, leeches to the perineum, hot irrigations and

injections of protargol. Rest must be secured, if necessary, by opium suppositories. Salol and Pulv. Ipec. Co. do much to relieve vesical tenesmus. In the chronic stage, irrigation, with hot saline solutions, followed by instillations of silver nitrate, are useful. Local patches of inflammation, found by the endoscope, should be treated by an Ultzmann's syringe with silver nitrate.

Chronic Gonorrhœa.—Armstrong[3] discusses chronic gonorrhœa in the male in relation to stricture of the urethra. The primary result of stricture is its obstructive action, and this alone may prove serious enough : but a second result is the alteration in the urinary organs, rendering them more easily infected by pathogenic organisms. The source of the infections may be the intestinal canal, the lungs, the bones (as in osteomyelitis or other septic focus) ; but only too often do evidences of infection follow soon after the introduction of instruments. These are the most common roads of infection, the blood and the urethra. When the infection is through the blood, the kidney is almost always first involved, and the intestines the most common source. This view is confirmed by the experiments of Posner and Lewin, who found that on ligation of the intestine in animals, microbes from the intestine passed into the urine. Other sources of infection than through the urethra or the blood are contiguous abscesses in prostate or peritoneal cavity. These, by perforation into the urinary canal, may cause infection. The author is of opinion that by far the most common source of infection is through the urethra and by the surgeon ; but it is only right to point out the other sources of infections which the surgeon is powerless to remove. Cystitis and bacteriuria may take origin in the kidney, this being infected through the blood. But this origin is seldom made clear.

Infection is, as a rule, coincident with urethral instrumentation. Sterilisation of the instruments and the operator's hands should, of course, be observed, and sterilisation of the urethra, though not always possible, should be attempted. It always contains germs in the anterior part at any rate. The accessible parts should be carefully washed with soap and water, and then with perchloride or carbolic lotion. The urethra should be syringed or irrigated with **Permanganate of Potassium**, or **Boracic Acid Lotion**. Only the anterior urethra should be treated.

As regards treatment, the author is in favour of dilating all strictures, and nearly all gonorrhœal strictures behind the peno-scrotal angle are dilatable by the continuous or interrupted methods. He reserves for cutting, strictures of the pendulous urethra, traumatic stricture, and congenital stricture.

GONORRHŒA IN WOMEN. *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

The life-history of the gonococcus has recently been re-studied by Bumm,[1] whose work is reviewed by Clark[2] in an interesting summary of the whole subject of gonorrhœa in women. Bumm believes that the gonococcus, like other micro-organisms in their evolution, has acquired specific functions, and that possibly, sooner or later, by modified culture methods, it may be possible to rob this organism of its specific character and reduce it to the grade of a simple non-specific pus producer. He has shown that by carrying one culture of gonococcus through medium after medium, a point is reached at which its specific character is so slight that only a very mild and short attack of gonorrhœa can be induced by its inoculation. In its artificial culture the gonococcus is very capricious, requiring specially prepared media and careful regulation of external conditions, while upon the mucosa of the genito-urinary tracts it thrives readily.

While, as Bumm says, the gonococcus may to some extent be deprived of its virulence through successive cultures, it does not naturally occur in the human individual, for it is a well-known fact that many of the worst cases of ophthalmia neonatorum are derived from mothers who to all appearances may have entirely recovered many years previously from an attack of gonorrhœa. Cocci which have apparently lain dormant in the tissues months or years thus appear to spring into new life through the favouring influences of the pregnant state.

In the same way a man and woman similarly infected may continue to hold sexual relations without a renewal of the acute process, a simply subacute condition being all that remains of the primary infection. If, however, one of these individuals has intercourse with a third person, the latter may acquire a most virulent attack.

As to an acquired immunity, Bumm, with many others, claims that this is not possible, for many cases have been reported which prove conclusively that a man just recovered from an acute infection may become re-infected immediately by an impure sexual congress.

In the pre-bacteriological era it was thought that with the cessation of the purulent discharge its specificity also disappeared; culture specimens, however, show that this is not true, for the glairy mucous discharge of chronic gleet may convey infection of a severe type. Noeggerath maintained that gonorrhœa, in women as well as in men, was a life-time affliction, but Bumm says that a large number of cases recover completely.

Neisser recently contended that microscopical examination enabled a positive diagnosis of gonorrhœa to be made: indeed he went further,

holding that gonococci might be present in the absence of clinical manifestations of gonorrhœa. On both points he has met with objectors. Thus, Behrens maintains that a microscopical examination is worthless. Clark (*op. cit.*) supports Neisser's view; on the other hand, Niebergal[3] records four cases in which, although there were no subjective or objective symptoms of the disease, and no gonococci could be discovered microscopically in the secretion, an explosion of gonorrhœa was accidentally provoked by mechanical irritation (dilatation of the uterine cavity, curettage), proving that gonococci must have been still present.

So also Kromayer[4] says that cases where ten bacteriological examinations have shown no gonococci to be present have soon proved themselves still infectious when some excess in drinking or coitus has been indulged in.

With reference to Neisser's second point, Schiller[5] examined bacteriologically the urethra and the cervix in three hundred women coming under observation consecutively for various disorders, without finding gonococci in any instance in which visible signs of disease were not present, scrapings being examined in cases in which secretion could not be detected. In all cases in which gonococci were found pathological secretion also was present. He points out that evidence of catarrhal inflammation may be overlooked unless the urine be retained for two or three hours before the examination, which should be made repeatedly with the aid of the endoscope, and before and after the menstrual period, and irrigation should be avoided.

As to the period of incubation of gonorrhœa, the usual clinical rule is five to seven days; but Bumm has found, through recent culture experiments, that even within twelve hours after the introduction of active organisms into the genito-urinary tract signs of inflammation become manifest, and after twenty-four more hours the attack is well established.

It is difficult, as a rule, to fix the exact incubation period in women, for an ordinary leucorrhœa is such a common event with them that even a profuse gonorrhœal discharge may not at first attract their attention.

The tendency of gonorrhœal infection in women is to become chronic, and while the patient herself may not suffer from appreciable lesions, nevertheless a sufficient number of gonococci are present to transmit the infection; for, as has been stated above, a few organisms may induce just as virulent an attack as myriads, on account of their almost incredible rate of multiplication. On account of the persist-

ence of this disease in the female individual, questions concerning the fidelity of married women who may re-infect their husbands may arise.

Diagnosis.—A whitish leucorrhœal discharge in women has no diagnostic value, but a profuse, purulent urethral discharge may be looked on as the most certain clinical evidence of gonorrhœa. Urethritis in women is, however, usually transient, and its absence at the time of observation is no evidence that there has been no gonorrhœal infection. The same remark applies to the chronic form of gonorrhœa, where it may be possible to express a small amount of purulent matter from the urethra or from the Bartholinian ducts. Absence of such purulent matter does not necessarily negative a diagnosis of gonorrhœa. Demonstration of the gonococci in the secretions furnishes the only positive evidence of gonorrhœa. Clark points out that in securing the pus for this examination the greatest precaution should be observed not to have it contaminated by other organisms. For bacteriological examination the vaginal discharge is almost valueless, because it contains, as a rule, such a large number of cocci and other bacteria. Secretions from concealed passages are the ones which are to be employed in a microscopical diagnosis. The urethra should be exposed, carefully cleansed with a mild disinfectant solution, and with the platinum loop the secretion should be withdrawn and placed upon a cover glass; if there is no urethral secretion, it may be possible to express a drop from Bartholin's duct. The cervix should always be examined, and to this end the Sims posture, which permits its complete exposure should be employed. Secretions obtained directly from the cervical canal are the most reliable, for when gonococci are demonstrated in them there is no longer any doubt as to the diagnosis.

For clinical purposes methylene-blue solution is a practical and easily manipulated staining fluid. The secretion may be spread out on the cover-glass or on a slide, the latter being usually the better. If it is very small in amount, or rather thick and viscid, it may be diluted slightly with a drop of normal salt solution. After spreading it evenly, it is dried by passing it a few times over the flame of an alcohol lamp or gas-burner. Methylene-blue solution is then dropped upon the slide and allowed to remain for one-half to one minute, and is then carefully washed off in running water, and dried with bibulous paper or with a clean white handkerchief. It is not necessary to protect the stained area with a cover-glass, for it may be inspected directly either with a high-power or (which is always preferable) with a one-twelfth oil-immersion lens.

To be certain of the diagnosis the gonococci must be found inside of the pus cells. While the presence of typical biscuit-shaped cocci in pairs, free in the secretion without the association of other bacteria is very significant, it is nevertheless unsafe to make a positive diagnosis.

PROGNOSIS.—In the majority of cases of gonorrhœa the infection remains limited to the urethra and cervix, and in these cases the prognosis is favourable, for many are completely healed even when the attack has been acute, and in the absence of all treatment. If the uterus becomes infected the prognosis is not so good, for the disease is apt to take on a chronic form, and it may then be very difficult to eliminate the gonococci entirely from the endometrium. Periods of apparent health may in such cases be followed without warning by a re-awakening of the trouble. Gonorrhœal infection of the tubes is looked on by many gynæcologists as incurable; others take a more hopeful view, and claim that even when much pus has formed the symptoms may subside altogether, although the tissues are never restored to their normal condition. But while conservative treatment, on the lines to be presently detailed, is often deserving of trial, a guarded prognosis should be given, and the possibility of future operation should be mentioned. The probability of pregnancy after tubal gonorrhœa is very small, sterility being the practically invariable rule.

TREATMENT.—It is of the first importance that the area of gonorrhœal infection, which is usually limited to the lower genital tract, should not be extended by the local means intended for its cure. Bumm and Behrens lay such stress on this point as to advise that no local treatment at all should be employed. Absolute rest in bed is prescribed as being sufficient, and also as being necessary, because the various movements of the body may favour dispersion of the infectious matter from its primary seats to the upper genital tract. It is especially during menstruation that rest is most essential, as conditions are then more favourable for the spread of infection.

When local treatment is undertaken, the disease should be carefully localised. In acute urethritis it is best to make no applications to the urethra; our own plan is to trust to a natural washing out of the urethra from within by the administration of **Copious Diuretics**. In the subacute form **Silver Nitrate**, 1-1000 may be injected into the urethra. **Ichthyol** in a 1 to 5 per cent. solution is strongly recommended by Clark, Neisser, Jadassohn and Bumm. The internal administration of **Balsam of Copaiba** has the support of modern as well as of older authorities. In the case of chronic urethritis the diseased patches should be localised with the endoscope and touched

with a **Galvano-Cautery**, or with a 20 to 50 per cent. solution of **Silver Nitrate.**

For the vulva and vagina a 1 to 10 per cent. solution of silver nitrate, applied through the speculum, is strongly recommended. We have had very good results from thorough swabbing of the vagina, through the speculum, with **Carbolic Acid**, 1 in 20.

In the treatment of inflammation of Bartholin's gland hot applications may sometimes be of service ; but, as a rule, complete extirpation is advisable, for when the gland once becomes the seat of chronic infection, it will not, as a rule, give way to any form of treatment, but persists as a source of continued infection.

When the cervix is involved it may be dilated, and silver nitrate, 1 to 5 per cent., applied to the mucous membrane, or a strip of gauze dipped in a 5 to 10 per cent. solution of ichthyol is left in the cervical canal. The uterine fundus should not be interfered with unless there is strong presumptive evidence of its infection, for there is grave danger of conveying the infection to the tubes. When local treatment is applied, it may be carried out on the lines indicated for the cervix. Shaw-Mackenzie[6] believes that many cases of chronic endometritis of apparently gonorrhœal origin are in reality due to syphilis, and claims to have had good results from the internal administration of **Mercury**.

In cases where the tubes are involved the most important element in treatment is absolute rest in bed. Bumm directs that the patient should be kept in bed for two months, and that she should be allowed to get up only when she has been free from pain and the temperature has been normal for a month. Meanwhile all uterine treatment should be suspended.

If an acute pyosalpinx supervenes, all authorities are agreed that operative interference is necessary. Some surgeons, such as Bumm, advocate total removal of the uterus and appendages ; others hold the view expressed by Clark, that it is sufficient to remove the tubes, leaving the ovaries and uterus. Taylor[7] prefers, whenever possible, free incision of the posterior vaginal fornix, thorough exploration and emptying of all pus cavities from the pouch of Douglas, and iodoform gauze drainage. In his excellent paper Taylor calls attention to the good results which often follow the treatment of gonorrhœal salpingitis, before the formation of pus, by the internal administration of **Mercury** and **Iodides.** He gives the following *résumé* of his views on the subject of the treatment of gonorrhœal salpingitis :—

First.—That a large number of women who are suffering from tubal disease have been at some time or another exposed to the infection of

syphilis as well as of gonorrhœa. That these undoubtedly show marked improvement after a prolonged course of mercury and iodides, and in the course of this treatment, unless acute pyosalpinx intervenes (in which medicine is useless), it is the rule rather than the exception for all gross physical signs of disease to slowly and permanently disappear.

Secondly.—That many cases in which there is no history of syphilis, including cases in which there is the unmistakable history of gonorrhœa, pure and simple, as the sole cause and starting-point of tubal disease, do similarly improve and get permanently well under the same course of treatment, provided always that the disease stops short of acute pyosalpinx and its dangerous complications.

Thirdly.—That acute pyosalpinx is peculiarly liable to occur in the first place on the left side of the body, and its special severity is probably due to secondary infection from the rectum. That cases of pyosalpinx, whenever possible, should be treated by free incision of the posterior vaginal fornix, by thorough exploration and emptying of all pus-cavities from the pouch of Douglas, and by iodoform gauze drainage. That this is far preferable to the older operation of removal of the appendages, which is not only much more dangerous, but is peculiarly liable to be followed by fæcal fistula, an operation-sequel sometimes worse than death itself.

Fourthly.—That such cases of mixed infection and acute suppuration treated by operative evacuation of the pus, with or without removal of the appendages, do sometimes not only recover but remain permanently well without further treatment, the acuteness of the inflammation appearing to terminate the process of infection. In other cases recovery is not so complete, or relapses are met with, and these cases should be followed up by a course of specific treatment, the beneficial result of this being often immediately manifest when the wound tissues are unhealthy and the healing is delayed.

Fifthly.—That occlusion of the tubes and peri-tubal adhesions, consequent on gonorrhœal adhesions, have no direct specific causation, and must be regarded rather as secondary mechanical results of the local peritonitis which has been caused by salpingitis.

Their absorption and disappearance will not therefore be necessarily secured by the cure of the gonorrhœa, and sterility may persist although gonorrhœa is entirely eradicated from the system.

Sixthly.—That in gonorrhœa of the pelvis there will probably remain a residuum of intractable cases, particularly cases of complication with other diseases, such as fibroids of the uterus. That in these cases operative removal of the organs affected will still be

required, and that vaginal hysterectomy, whenever possible, with or without extirpation of the uterine appendages, is not only the most rational operation in theory, but is productive of the best final results.

The use of mercury in gonorrhœal conditions deserves a word more. Churton[8] has recorded cases of severe gonorrhœal arthritis, a few simple, others complicated with rheumatism or with syphilis, or both, in which the duration of the disease was apparently very much lessened by the frequent administration of **Sandal-wood** and other oils, **Salicylates** and **Mercury**, whilst in cases of gonorrhœa associated with a condylomatous condition of the external genitals, even without any history of syphilis, the writer has seen very rapid improvement follow the internal administration of the **Biniodide of Mercury**, combined with the local application of **Black-wash** and **Mercurial Ointment.**

Clark sums up his review of the treatment of gonorrhœa by saying that it is quite evident that absolute rest in the acute stages of the infection is one of the most important essentials. The second point which is brought out is that the silver salts, notwithstanding the fact that they have been very largely condemned by a number of writers, still maintain a very important place in the treatment.

Thirdly, that of the more recent remedies which have been suggested, ichthyol unquestionably is the most valuable, because it is non-irritating, is very effective in alleviating pain and reducing the inflammation, and absolutely free from any disagreeable sequelæ, such as are occasionally noted after the use of the more irritant remedies.

A point also upon which special stress should be laid is that the principle of immediate germicidal treatment in acute cases, as insisted upon by Neisser, appears more judicious than the conservative plan employed by Behrens and others.

REFERENCES.—[1] "Veit's Handbuch der Gynäk.," vol. i.; [2] "Amer. Journ. Med. Sci.," Jan., 1900; [3] "Beitr. z. Geb. u. Gyn.," vol. ii., p. 52; [4] "Münch. Med. Woch.," vol. xlv., No. 24; [5] "Berl. Klin. Woch.," Oct. 9, 1899, p. 898; [6] "Brit. Med. Journ.," Oct. 14, 1899; [7] "Med. Press and Circ.," May 31, 1899; [8] "Lancet," Feb. 10, 1900.

GONORRHŒAL RHINITIS. (See "Rhinitis.")

GOUT. (See also "Rheumatism.") [*Editorial.*

Dr. Chalmers Watson,[1] as a result of a series of investigations, concludes that: (1,) The alkalinity of the blood is not diminished during the attack; (2,) The excretion of uric acid is not diminished during the attack, but the reverse; there is therefore no ground for the supposition that there is temporary diminution in the capability of the kidneys to excrete uric acid; (3,) The amount of uric acid in the blood is not greater during the attack than in the intervening period:

and if these points be accepted we must start *de novo* in search of the cause of the acute paroxysm. In this connection it would, he thinks, be well if much less attention were centred on the excretion of uric acid alone as the all-important factor in the disease, whether in its acute or chronic form.

Dr. A. F. Luff,[2] from a series of observations, finds that the alkalinity of the blood of healthy adults varied from 0·161 to 0·185 per cent. of sodium carbonate, with an average of 0·167 per cent. The alkalinity of the blood of gouty patients varied from 0·193 to 0·251 per cent., with an average of 0·2 7 per cent., which was nearly one-third higher than that of normal blood. Since this increased alkalinity of the blood was due to a higher proportion of sodium carbonate or bicarbonate, and since these substances accelerated the conversion of the gelatinous biurate into the crystalline variety, and therefore the precipitation of the latter, it was intelligible why such blood was prone to hasten and to augment the formation of gouty deposits. The inference was, therefore, that this increased alkalinity determined the gouty paroxysm.

Dr. William Bain [3] has published a series of experiments respecting the effect of various drugs upon the excretion of nitrogen in gout. After sodium salicylate there was only a small increase, after guaiacum the uric acid increased but the urea fell. But neither the phosphorus pentoxide nor the bases showed a corresponding increase, thereby denoting that this drug probably acts not by increasing the production of uric acid, but by eliminating a part of that stored in the blood. The bearing of this fact on the treatment of chronic gout will be appreciated. It is also noticeable that the increased excretion of uric acid was maintained for some time after cessation of the drug, the patient's condition being at the same time ameliorated. It is satisfactory to note that the experimental evidence adduced confirms the opinion, based on empirical knowledge, expressed by Sir Alfred Garrod, that guaiacum was a powerful prophylactic agent in gout, this opinion being subsequently corroborated by Dr. Luff.

The excretion of uric acid with potassium iodide was raised and is probably attributable to the maintained effect of guaiacum. The value of potassium iodide in chronic gout is founded rather on its apparent power of retarding cardio-vascular and renal changes, and reducing albumin in the urine. Under colchicum a slight advance in the uric acid occurred. That it has an invariable effect on the excretion of uric acid is extremely doubtful. The result with quinine on the excretion of uric acid is contrary to the diminution usually observed. This

again may be accounted for by the continued improvement in the patient's condition.

The results obtained with the experimental diets are not in agreement with the generally accepted view upon which the dietetic treatment of gout is frequently based. There is matter for reflection in the fact that a diet consisting largely of leguminous principles should so markedly increase the uric acid, the phosphorus pentoxide, and alloxur bases.

Dr. Arthur P. Luff[4] offers the following suggestions for the treatment of gout :—

(1,) In cases of acute gout the gouty paroxysm must be treated and the severe pain must be relieved. This can be effected by the free administration of **Colchicum** and **Potassium Citrate** and by a mild **Blue Pill** and **Epsom Salts** purge. The painful joint or joints should be packed with wool saturated with a warm alkaline and anodyne lotion.

(2,) The elimination of uric acid should be promoted. For this purpose free diuresis should be encouraged by the adminstration of plenty of water, and by the employment of potassium citrate, or potassium bicarbonate, or similar salts which exercise a diuretic effect and which at the same time diminish the acidity of the urine. For the same purpose green vegetable food should be freely taken.

(3,) The excessive formation of uric acid should be checked. This object is mainly attained by a carefully selected dietary. When once the acute attack of gout has subsided there is no necessity to exclude butcher's meat from the dietary of the gouty. On the contrary, it is better for most patients that it should be moderately partaken of. Although a mixed diet is best suited to gouty patients, yet it is important that the dietary should be a simple one, and it is especially desirable to avoid at any one meal much mixing of proteids and carbohydrates. The stomach of a gouty patient, unlike that of a healthy individual, is not well able to digest half-a-dozen different kinds of food at the same time. The metabolism of the liver should also be promoted by the administration of **Guaiacum,** by an occasional mild **Cholagogue Pill**, and by keeping the bowels open.

(4,) Attention should be paid to general hygiene. It is important to insist on suitable exercise being taken as soon as the patient is fit for it. It is interesting to note that the investigations of Dr. R. Caton into treatment practised by the ancients at the temples of Asklepios demonstrate that the priests very successfully treated gout by prescribing plain and simple diet, the use of water internally and externally, massage, active gymnastic exercise, and exercise in the

open air. Golf and cycling are two excellent exercises, in moderation, for the gouty.

(5,) Enlarged joints and other gouty deposits should be treated with a view to the removal of the deposited sodium biurate. This important branch of the treatment of the gouty can be carried out in various ways. Massage and muscular movements increase the flow of lymph in the lymph channels, and so tend to promote removal of uratic deposits, and to increase the metabolism of the joints. This treatment may with great advantage be combined with the passage of the constant current through, and the employment of cataphoresis to, the affected joints and tissues. Excellent results have been had in several cases from the employment of such treatment. Baths of various kinds are most valuable. Suitable treatment at a properly selected spa is also of great benefit.

Dr. James Edmund[5] says he has for some years discarded sodium salicylate for the **Potassium Salicylate**. In doses of 10 grs. the potassium salicylate gives great relief in the acuter cases, and he never sees any of the "cardiac depression" which is talked about in connection with the exhibition of potassium salts.

In chronic gout and rheumatism, so long as the urine becomes turbid by the deposition of urates on cooling, he uses the old remedy potassium bitartrate. As a febrile drink there is nothing to match it, in barley water nicely made from Robinson's barley flour, and sweetened to taste with loaf sugar if the patient be of spare habit ; perhaps, also, flavoured with a rub of lemon peel. But the cooking in, or infusion with, lumps of lemon peel spoils the preparation as a pleasant beverage. For the non-febrile chronic cases with turbid or scanty urine he gives 20 grs. of the **Potassium Bitartrate** as a beverage at lunch or dinner, and sometimes also at bedtime ; 20 grains is a small saltspoonful. It should be put into a dry tumbler, and the tumbler then filled up with Salutaris or other pure aërated distilled water. If palatable distilled water be not available the tumbler should be filled up with hot water that has been boiled for a few minutes, so as to make the water safe and throw out chalk. With persons of spare habit the bit of sugar may be added and, if longed for, the flavour of the lemon peel. The bitartrate beverage should be drank as hot tea is drunk. Its use rapidly clears the system of urates. With these two salts he finds that he accomplishes better than with any other substances all that can be done for the elimination of uric acid. And he finds them extremely valuable. Ferric chloride dropped into the urine first throws down all the phosphoric acid as the white ferric phosphate and gives its measure : it then gives the brilliant

violet tint which shows how far the system is still charged with salicylic acid, and serves as an end-pointer for the phosphoric acid.

As everyone knows, the potassium bitartrate is the purified argol which is thrown out from grape juice, as the transformation of its sugar into alcohol renders the bitartrate insoluble. It is therefore a pure grape salt, and comes to us with an adequate prestige. But he writes purely from the chemical side. The potassium bitartrate gives a pleasant beverage, which is acidulous, and therefore goes well with the gastric juice during digestion. Absorbed as it is directly into the blood by the veins of the stomach, it is carried into the substance of the tissues, and there its tartaric acid is oxydised into CO_2 and H_2O, while nascent potassium bicarbonate is set free in the tissues in a state of perfect diffusion and almost infinitesimal dilution. It use is therefore quite a different thing to the projection into the stomach of a crude alkali. He finds that none of the remedies so impudently advertised for uric acid can compete with these very simple and inexpensive ones; 20 grs. of potassium bitartrate contain 5 grs. of anhydrous potash (K_2O).

As an aperient in such cases he uses an old and favourite prescription, which consists of pulv. guaiaci, potass. bitart., sulphur. precip. āā ʒj, pulv. trag. co ʒij. M. ft. pulv. A teaspoonful at bedtime in a wine-glassful of water or gruel.

Dr. James F. Goodhart[6] in a lecture on Acidity describes the case of a patient, a careful liver, who took no alcohol and lived largely on milk foods, who was attacked with severe abdominal distension, followed by profuse sweats. After some days he began to pass uric acid. He dieted on milk and rice pudding, but the uric acid increased in quantity, and he had severe pains in the chest of angina-like character. A meat diet was substituted, and although he ate more with this diet the uric acid disappeared and with it the symptoms. After citing various other cases Dr. Goodhart said: "The large majority (of practitioners), when a man is found to be passing uric acid, look upon it as a matter of diet *exclusively*. I want you all to go back upon your experience, to put away all that you have read and seen through other people's spectacles, and to observe again afresh and then to answer the question, Is it so? . . . .

"We cut out of the diet sheet all red meat. But why only red meat? Surely, it is very inconsistent to reject this alone of all the nitrogenous products which are supplied to us. Why not exclude fish and fowl and eggs and all the vegetable albumins? These things are allowed because they contain less extractives. But is this rule so universal as we make it? Emphatically no."

Speaking of children who pass uric acid, he reminds us that they are seldom large meat eaters, and says that it is better to increase their meat (plain cooked, roast or boiled : not beef-tea or beef extracts or jellies, to which parents often fly between meals in poor-looking children), make them drink more water, and diminish correspondingly the quantity of starch food taken. That is the practice which he has carried out for a long time and has never seen reason to regret it. Regulate the diet all round, as the late Sir William Roberts wisely said ; it is not the fault so much of any special food. Children will pass uric acid even upon an excess of milk.

In respect to the use of sugar in patients who suffer from gravel, Dr. Goodhart says : "I hold that, after all, sugar is not a poison, and this wholesale condemnation of a wholesome article of food can hardly be other than a fad. By all means cut off sugar on good reason shown for this or that individual ; but I know this, that there is many a gravelly one who can take sugar in moderation as an article of food and not be a bit the worse for it. Nay, more, there are some of the 'gravelly' who cannot do without sugar."

Dr. Sydney A. Bontor[7] describes the following method of **Cataphoresis:** The affected joint is placed in a 2 per cent. solution of lithium citrate rendered just alkaline in lithium carbonate ; and another convenient part, *e.g.*, the hand or foot, is placed in a solution of common salt ; a current of 10 to 30 ma. is then passed for half an hour, the idea being that the lithia is then introduced into the body in a form ready to combine with the sodium biurate deposit, and that this deposit is thereby eliminated. That this view is probably erroneous will at once be seen from what we have already observed as to the solubility of sodium biurate in lithia salts ; but notwithstanding this I have satisfied myself that this form of treatment exerts a decidedly beneficial influence on those joints which have been rendered stiff and useless by large deposits. The benefit in one case was most marked. After a few weeks' use the hands could be closed, and the patient could walk better than had been possible for several years. And that this was entirely due to the treatment, I have little doubt, as the patient was leading his ordinary life, and was not taking medicine or using other remedial measures. A comparison of the size of the fingers before and after treatment shows no diminution, however, and I attribute this improvement in mobility to an improved condition in the fibrous tissues, which forms the basis of those large deposits, rather than to an absorption of the gouty deposit.

Gouty Concretions.—Dr. E. L'H. McGennis[8] states that he has had success in three cases from the use of cataphoresis for dissolving gouty

deposits. He uses cotton wool saturated with a solution of iodide of lithia. This is applied over the deposit and the positive pole of a galvanic battery is placed in contact with it, while the negative pole is held in the patient's hand. He employed a strength of 15 to 20 milliampères.

Grofredi[9] recommends the injection of **Piperazine Solutions** to dissolve the gouty tophi ; 0·05 grm. to ½ c.cm. of water proved painful, but weaker solutions might be used with advantage.

The following has been recommended (Butler) :—

R	Lithii Benzoatis	5ijss	Tinct. Colchici Sem.	5ijss
	Sodii Phosphatis	5v	Aquæ Cinnamomi	ad 5iv

M. Sig.—Dessertspoonful two or three times daily.

Dr. H. C. Wood recommends the following prescription :—

R	Lithium Benzoate		Potassium Bicarbonate	20 grs.
	Lithium Bicarb.	āā 15 grs.	Carbonic Acid Water	1 pint

Mix and dispense in a siphon. Two pints daily.

REFERENCES.—[1] "Brit. Med. Jour.," Jan. 6, 1900 : [2] "Lancet," March 31, 1900 : [3] "Brit. Med. Jour.," April 1. 1900 ; [4] "Lancet," Nov. 18, 1899 ; [5] "Brit. Med. Journ.," June 9, 1900 ; [6] "Lancet," Jan. 6, 1900 ; [7] "Treatment," July 13, 1899 ; [8] "Amer. Med. Jour.," April 7, 1900 ; [9] "Gaz. degli Osped.," Aug. 20, 1899.

GRAVES'S DISEASE. (See "Goitre, Exophthalmic.)

HÆMATURIA (Renal). (See "Kidney.")

HÆMOGLOBINURIA.

Synopsis.—(Vol. 1900, p. 238). Bastianelli gives **Quinine** only if parasites are found in the blood. Crosse advises **Cholagogue Purgative** and **Enema** for constipation ; **Sodium Bicarb.** to allay gastric irritation ; **Opium** to procure rest, and **Cardiac Stimulants** if necessary.

HÆMOPTYSIS.

Synopsis.—(Vol. 1900, p. 400). **Atropine Injections**, $\frac{1}{60}$ to $\frac{1}{70}$ gr. doses has succeeded after failure of all other drugs.

HÆMORRHAGE (after Tooth Extraction).

Synopsis.—(Vol. 1900. p. 239). Suturing the flaps of gum together. **Styptic Wool** for oozing of spongy gums. **Actual Cautery. Torsion of Artery.** Avoid plugs if possible, as they get very foul. **Calcium Chloride**, 60 gr doses, for hæmophilia, for which also injection of **Antidiphtheritic Serum** has proved effective.

HÆMORRHOIDS. *Herbert Wm. Allingham, F.R.C.S.*

Dr. R. Rounne[1] says that when excoriations form upon the hæmorrhoids, or when small losses of blood occur, he prescribes the following suppositories :—

R	Chrysarobin	grs. $1\frac{1}{5}$	Extract of Belladonna	gr. $\frac{1}{10}$
	Iodoform	gr. $\frac{2}{10}$	Cacao Butter	grs. 30

M. For one suppository. Two or three suppositories may be used daily.

Later the suppositories may be replaced by the following ointment :—

R	Chrysarobin	grs. 12	Extract of Belladonna	grs. 9
	Iodoform	grs. 4½	Vaseline	grs. 150

M. For local application several times a day.

The "Gazette hebdomadaire de medecine et de chirurgie" for April 20th credits the following formula to Adler :—

R	Fluid Ext. of Hamamelis	Tincture of Belladonna	4 parts
	Fluid Ext. of Hydrastis	Solu. of Carbolic Acid	
	Comp. Tinc. of Benzoin āā 16 parts	(5 %) in Olive Oil	32 parts

M. To be applied two or three times a day.

A writer in the "Nord médical" for March 15th, 1900, gives the following formula :—

R	Cocaine Hydrochloride	grs. 15	Calomel	grs. 45
	Ergotine	grs. 60	Vaseline	
	Ichthyol	grs. 75	Lanolin	āā grs. 225

M. A portion as large as a small nut to be inserted into the rectum after an evacuation.

Dr. R. Timmerman[2] (Hanover) says **Anusol** is a combination of bismuth with iodo-resorcin sulfonic acid. It acts upon suppurating, secreting, or moist surfaces, drying up and limiting the secretion; it is a very powerful disinfectant and deodorant, as well as an astringent, these properties explaining the strong action of anusol in causing granulation and consequent healing of sore parts; and, furthermore, anusol acts in a most suitable manner, when combined with other substances, in the treatment of hæmorrhoids, as it relieves constipation and removes any hardened fæces, causing a slippery, pappy, and painless stool.

J. Klewtzow[3] finds the use of **Calomel** in the form of a suppository very beneficial in cases of hæmorrhage due to piles. He tried it on himself and in a series of cases, mostly of old standing, and the results were highly satisfactory. He claims that it immediately arrests the bleeding, lessens the frequency and chances of its occurrence, and greatly reduces the size of the hæmorrhoids (probably by inducing contraction of the muscular walls in the vessels), and hence the subsidence of the pains on defæcation and movement. Altogether not more than from 12 to 15 suppositories were used in a single case, one suppository being daily introduced into the rectum, and left there for twelve or twenty-four hours according as the conditions of the case demanded.

Schwartz[4] states that the indications for operation in cases of hæmorrhoids are: bleeding, pain, an abundant mucous discharge,

habitual procidentia, and ulceration. Operation is not advisable when the hæmorrhoids are painless and uncomplicated, and when they are symptomatic of lesions of the pelvis or viscera. Moreover, when they are accompanied by regular bleeding, and occur in gouty patients without apparently influencing the general health, the general treatment so well known is advised. As to the operative treatment, the value of dilatation is again insisted upon. Cauterisation is considered *par excellence* the best method. Each small tumour is seized in forceps and cut away with a hot iron. This, it is stated, can be done painlessly, after first freezing the mass which has been seized by chloride of ethyl. The iron should be heated only to a dull red, as otherwise it will set fire to the ethyl vapour.

Dr. Zuckerkandl[5] recommends **Dittel's Elastic Ligature,** after employing it with good result in two hundred and sixty-nine cases, as a simple and radical means. General anæsthesia is not necessary; the Schleich infiltration anæsthesia suffices to deaden the pain. The operation is applicable only for internal hæmorrhoids with prolapse of the mucous membrane. By pressing, the patient forces the masses as far out as possible; then with a polyp forceps curved on the flat and directed by the index finger of the left hand the pedicle is grasped and the forceps are twisted to an angle of ninety degrees. This procedure displays the hæmorrhoid, which is then tied off with tensely stretched elastic ligatures. After from eight to ten days the ligated masses necrose and fall off, leaving a clean granulating wound, which heals in as many more days.

W. Thelwall Thomas[6] says, for several years he has operated on piles by a method designed to bring about healing by first intention, and at the same time to prevent either reactionary or secondary hæmorrhage. It requires no special clamp; and the only assistants necessary are a Clover's crutch and an anæsthetist.

Under anæsthesia the patient is placed in the lithotomy position, being kept there by means of the "crutch." The sphincter is forcibly dilated by introducing the thumbs into the anus and placing the fingers on the buttocks, and forcibly separating the thumbs slowly. The sphincter yields; this is continued until the anus remains widely dilated, with no tendency to contract. A large pile is seized by artery forceps, and its base clamped, the clamp being always put on in the long axis of the bowel. He has most frequently used Smith's clamp, but dressing forceps with a catch will do quite as well. The bulk of the pile is cut away, leaving a small stump standing off the clamp. The treatment of this is the essential feature of the operation.

A piece of catgut, not too fine, about a foot in length, with a domestic needle at each end, is used for a suture. Commencing at the top end of the stump one needle is passed through, and the catgut follows until there is one half the length of the suture on each side, with its own needle attached. A reef knot is tied on the stump, and the needle, which is on the right side, is brought over to the left and passed through the stump lower down and back again to the right. The needle which is on the left is taken over to the right and passed through the stump back to the left immediately adjoining the previous one. A reef knot is again made, and so on to the end of the stump, making five or six crossings to the inch. This method of suture brings the cut edges of the mucous membrane tightly together, and its advantage over a simple continuous suture is apparent, each cross and knot making each segment independent of the next. The clamp is slackened, and occasionally, though rarely, it may be necessary to tie a small vessel at the top end of the stump, particularly if a cross acting clamp is used. All the internal piles are thus treated.

As to the external piles, which are always covered by a rugose fold of altered skin, they are snipped off by scissors, without clamping, pointing up the bowel. If a small vessel bleeds, it is tied. The cut edges of skin are sutured by a continuous, or button-hole, stitch of catgut. Too much of the anal skin must not be removed, and the skin must never be sutured in any other direction but that of a continuation of the long axis of the bowel, else cicatrisation, leading to anal contraction, will follow. It will now be seen that there is no raw surface left to be irritated or to granulate, and no tissue to separate by sloughing.

For the third class of case (where there is a large prolapse of mucous membrane bearing piles) it becomes necessary to perform Whitehead's operation, of dissecting the relaxed mucous membrane away. This proceeding is not often called for, but when it is the result is very good. If this operation is carried out as described by Whitehead it is difficult to understand the adverse criticism it has received in some quarters. The common error is to remove the external sphincter, wholly or in part, and then blame the operation for incontinence of fæces, instead of the operator who attempted it.

REFERENCES.—[1] "Presse Méd.," Dec. 2, 1899 ; [2] "Therapist," Jan. 1899 ; [3] "Vratch," No. 7, Feb. 25, 1899 ; [4] "Jour. des Practiciens," No. 16, 1899 ; "Therap. Gaz.," Aug. 15, 1899 ; [5] "Wiener Mediz. Presse," "Med. Record," June 25, 1898 ; [6] "Brit. Med. Jour.," Nov. 26, 1898.

HAMMER-TOE, AND HALLUX VALGUS AND RIGIDUS.

Priestley Leech, M.D., F.R.C.S.

Warrington Haward[1] gives the following points as to the origin of hammer-toe: (1,) It is not dependent on contraction of the flexor. The deformity is not a mere flexion of the phalanx but is a hyperextension of the proximal phalanx, a flexion of the second phalanx and a thrusting upwards and hyperextension of the ungual phalanx; (2,) The extensor tendon is shortened; the flexor tendon is not contracted but follows the plantar retiring angle; (3,) The lateral ligaments are shortened, the plantar ligaments are unaltered; (4,) The articular surface of the first and second interphalangeal joints are altered in shape in accordance with the incidence of the pressure caused by their fixation in an abnormal position. As to the causes of the deformity Haward has no satisfactory explanation. It is not usually caused by wearing mis-shapen boots, though too narrow and too short boots may cause it; in many cases the deformity is inherited, the deformity appearing in one side only of the family. It is sometimes congenital. A similar condition of all the toes is seen sometimes in neurotic girls with bad circulation. In these cases there should be attention to the general health, with plenty of fatty food, and massage to toes, and if the extensor tendons are persistently contracted they should be divided. In pronounced cases of ordinary hammer-toe several methods of treatment may be tried. A quick way in hospital patients is to amputate at the metatarso-phalangeal joint by the oval incision; a better way, however, is to excise the head of the proximal phalanx, by turning back a semilunar flap from the dorsum of the toe and dividing the lateral ligaments; if there is a bad corn over the knuckle, excise it by an oval incision in place of a flap. The foot is kept on a splint for three weeks. The patient is cured and by this method is quite fit for active service in the army. In mild cases, more especially in children, division of the extensor tendon and the lateral ligaments and of any bands that prevent straightening of the toe, and fixation of the toe on a splint for some weeks, give good results.

In *Hallux valgus* or bunion excision of the metatarso-phalangeal joint, and of the bursa over it, together with division of the tendon of the toe, gives good results. In mild cases removal of head of metatarsal bone may be enough. In a case of *Hallux rigidus* excision of the joint gave good results although there was no disease of the bones or of the joint.

REFERENCE.—[1] "Lancet," July 28, 1900, p. 240.

HAY FEVER. (See also "Asthma.") *W. Milligan, M.D.*

Rixa,[1] in severe cases of hay-fever, uses the subjoined formula with an atomiser:—

R	Acidi Boracici	grs. xx	Glycothymolinis		℥ij
	Mentholis	grs. iv	Sol. Eucainæ β (4%)	q.s. ad	℥ij

REFERENCE.—[1] "Laryngoscope," March, 1899.

HEADACHE.

(*Synopsis.*—(Vol. 1900, pp. 10 and 244). **Methylene Blue** in nervous headache. As tonic and stimulant following infectious intoxications, R Op. Pulv., gr. ss.; Zinci Phosphidi, gr. ss. Ft. Pil. Mitte xx, 1 t.i.d. In similar cases as tonic, R Ferr. et Ammon. Cit., gr. 40; Liq Pot. Arsenicalis, ♏40; Syr. Zingib., ℥ss; Inf. Calumbæ, ad ℥iv. ℥ij post cib. Specially for children after infective diseases. In uræmic headaches accompanying interstitial nephritis, R Pot. Citrat., ℥ij; Tinc. Hyoscy., ℥ij; Sp. Æth. Nit., ℥ij; Inf. Scopariæ, ℥vj. M. ℥ss t.i.d. ex. aq. To increase vascular tension add Inf. Digitalis. For headache due to auto-intoxication from dyspepsia, R Sod. Bicarb.; Bismuth. Subgall. Pulv. Acaciæ, āā ℥j; Liq. Ammon Anisi, ℥ij; Aq. Dest. ad ℥viij. M. ℥ij before meals, repeated in three hours if necessary. In dyspeptic headaches of females without much flatulency, R Ferr. Sulph. Quin. Sulph., āā gr. 15; Sod. Arsen., gr. ss; Pulv. Rhei., Pulv. Zingib., āā gr. 10; Ft. Pil., No xij, t.i.d., post cib. When due to organic heart disease, **Cold Water Compress** to cardiac region and **Stimulating Foot Baths** or **Hot Sitz Baths**, aided perhaps by one of the **Bromides**. When due to sluggish circulation, **Caffein** and **Strychnine** are useful; also R Ext. Cannabis Indica, gr. ⅛ to ½; Ext. Gentianæ, q.s., Ft. Pil. In anæmic conditions with slow digestion, R Quin. Sulph., Ext. Aloes Aq. āā gr. xii; Pulv. Capsici, Pulv. Ipecac., āā gr. 6, Glycerini, q.s. Ft. Pil., No. xii, one at mid-day. Or, R Ext. Nuc. Vom., gr. ss; Pil. Rhei Comp., gr. iij; Pulv. Capsici, gr. ¼. Ft. Pil. one at mid-day. **Caffein** or **Phenacetin** may be used at the same time if required. Forcible syringing of nasal accessory sinuses with hot dry air or nitrous oxide gas often relieves frontal headaches.

HEART (Diseases of). *Prof. Alfred H. Carter, M.D., F.R.C.P.*

Functional Disorders.—In the Bradshaw Lecture, at the Royal College of Physicians, Dr. Foxwell[1] made a valuable contribution to the pathology of functional pulmono-arterial murmurs, based upon elaborate observations and experiments which go to show that these murmurs depend upon a localised dilatation of the conus arteriosus and pulmonary artery and not upon any alteration in the quality of the blood; and further, that such dilatation is usually the outcome of repeated sudden and sharp exertion.

Heart Disease and Influenza.—Important and interesting observations have been made by various writers on the liability of influenza to induce functional or organic disease of the heart. Thus Austin[2] has reported three cases of endocarditis in which bacilli were found in the valvular lesions, conforming to the characters of the Pfeiffer bacillus.

In two of them, acute ulcerative endocarditis was superimposed upon old endocarditis.

The writer has also seen at least one such case, in which the same result was clearly established. A young man, suffering from an old aortic lesion, probably induced by over-indulgence in athletic games, but otherwise strong and in good health, was attacked by influenza; and, in the course of two or three weeks developed ulcerative endocarditis, with severe anginal attacks, and characteristic embolic phenomena, and who shortly afterwards died from what appeared to be a plugging of a large cerebral vessel. No *post mortem* examination was made.

Bunch [3] and Saundby [4] have also written careful papers on the same subject. The following varieties of disturbance are recognised: (1,) Increased frequency of cardiac rhythm, either persisting some time as a sequela, or of a paroxysmal type; (2,) "Irritable heart," occurring especially in those who have engaged in excessive muscular exertion too soon after an influenzal attack; (3,) Slow and feeble action; (4,) Intermission and irregularity, the latter being of more unfavourable import than the former; (5,) Acute dilatation—often fatal, especially in elderly patients; (6,) Attacks of an anginal character, the seriousness of which is apt to be under-estimated when occurring in those under middle age; and (7,) The conversion of an old endocarditis into acute mischief of an infective type.

Of the importance and frequent gravity of these cases there is no doubt. "In forming a prognosis, account must be taken of the patient's age, social position, and occupation, as well as the actual amount of dilatation. Recovery is to be hoped for when the patient is not too old for repair to be active, and where rest and suitable treatment are not likely to be sacrificed to the necessity of earning a living. Complications of all sorts must influence prognosis, and those on the side of the stomach are most difficult to manage successfully" (Saundby).

As regards *treatment*, all agree that the first requisite is rest—not necessarily rest in bed, though this may be necessary in some cases; but in all cases, careful avoidance of everything calculated to throw strain, and especially sudden strain, upon the heart. Next to rest, diet and digestion claim close attention. Bunch speaks approvingly of restricting the amount of fluids taken. Indulgence in tea, coffee, alcohol and tobacco is more often prejudicial. As to drugs, **Strychnia** and **Arsenic** in moderate doses are of most service. When there is persistent rapid action of the heart, and the stomach is tolerant, **Digitalis** may sometimes be advantageous. Bunch also

urges that, in properly selected cases, the calmative effect of **Morphia** may be of great value. As the more urgent symptoms subside, Saundby strongly recommends the employment of the Nauheim treatment; and there is no doubt that in carefully graduated exercise we possess a potent means of increasing cardiac efficiency. Affections of this class are almost always benefited by removal to pleasant bracing health resorts, with complete freedom from business cares and worries.

Heart Disease and Typhoid Fever.—Disturbances closely analogous to those above recorded in influenza are met with in typhoid fever convalescents. Dr. Mollard[5] carefully observed fifty-two cases. Of these—during convalescence—only ten had a perfectly normal heart. Of the remainder fourteen quickly amended, but in twenty-eight the disturbance was prolonged. Tachycardia was most frequently met with; and, next to this, irregularity. In almost all there was a modification of the cardiac impulse—diffused, or outside its normal position. In many of them a soft systolic murmur was heard, of maximum intensity internal to the apex, over the right ventricle. In those cases which he was able to follow up, this murmur ultimately disappeared. Burland[6] also records the frequency of undue rapidity of the pulse, in typhoid convalescents on the way back from South Africa.

The Heart in Anæmia.—Gautier,[7] as the result of an exhaustive study of twenty-two cases of chlorosis, found enlargement of the heart, sometimes very marked, in twenty. He assumes that it was due to dilatation and hypertrophy. In some, it subsided on the disappearance of the chlorosis; in others, it persisted for a considerable time. Wybauw[8] confirms these conclusions in a paper on the same subject; but points out that displacement of the heart caused by gastric distension may simulate dilatation. In true dilatation, gastralgia may sometimes be the only symptom.

Cardiac Over-Strain.—Poynton[9] in an interesting paper on this subject, records the condition of the heart in nine public school boys, before and after taking part in the annual school foot races, and was able to establish a distinct enlargement of the heart to the right, and upward and to the left in the region of the conus of the right ventricle. The ages of these boys varied from fourteen to eighteen years.

He points out that if a boy is to be barred from school games and sports, it is necessary to know with some accuracy their relative exertion value, and he briefly discusses the varying strain of different school games. Williams[10] is also of opinion that all general state-

ments with regard to the effects of exercise upon the heart are fallacious; and that every heart and every form of exercise should receive special attention. In apparent contradiction to Poynton, whose results point chiefly to the right heart as the part most readily yielding to strain, he thinks that the left heart is most liable to suffer.

Heart Disease and Gout.—Grube [11] regards periodic irregularity as the earliest sign of gouty implication of the heart. It is often incorrectly attributed to dyspepsia. Later, we meet with palpitation, a feeling as if the heart had suddenly stopped, fainting, and cardiac oppression. The pulse is often much quickened; more rarely, it is retarded. Anginoid pains are not uncommon, and may be difficult to distinguish from true angina. The author believes that these troubles are caused directly by uric acid upon the heart-muscle; or indirectly by sclerosis of the coronary arteries. The diagnosis is based upon: (1,) Absence of other obvious causes such as alcohol. tobacco, tea, etc.; (2,) The presence of regular gouty attacks, or irregular gouty affections; (3,) A family history of gout: and (4,) The absence of organic heart lesions. The prognosis is favourable.

PATHOLOGY.—*Myocardium.*—Boynton [12] draws attention to the importance of a more careful study of myocardial changes in heart disease. Endocardial and pericardial conditions are more easily recognised, and are often credited with causing trouble which is really due to unrecognised myocardial changes. Mechanical explanations are apt to take too prominent a part. In judging of the gravity of heart disease, symptoms are of more import than physical signs, and these are chiefly due to enfeeblement of the heart-wall. The paper contains many observations on myocardial lesions, which are worthy of study.

Lazarus Barlow [13] reports an interesting case of gummata in the heart-wall. Renaut [14] affirms the correspondence of the myocardial appearance in diphtheria with those produced experimentally in animals by inoculation with diphtheria toxins; and infers that the myocardial lesions of acute specific fevers generally are brought about in a similar way.

Endocardium.—Harbitz [15] divides cases of endocarditis into two groups: (1,) Infectious—due to specific micro-organisms; and (2,) Non-infectious, in which the exciting agent is not known, as in rheumatic endocarditis. Of those cases dependent upon pyogenic microbes he also recognises two groups: (1.) Those in which the endocardial lesion is secondary to a general infection; and (2,) Those in which the valvular changes are primary and form the central focus from which the rest of the body becomes infected.

Loeb[16] and Jaccoud[17] have written on the subject of gonorrhœal endocarditis, from which we gather that acute gonorrhœa may be the starting-point of grave general septicæmia, of which endocarditis is a frequent feature. It may be caused by gonococci entering the circulation, or by pyogenic organism, or it may be mixed. Three forms may be recognised: (1,) A mild and transient form; (2,) A form resulting in a chronic valvular lesion; and (3,) A rapidly fatal form of ulcerative endocarditis. The last appears rarely to attack healthy valves, but is grafted upon a preceding endocarditis. Pericarditis may occur, but it is much rarer than endocarditis. In some few cases, a diagnosis may be made by a bacteriological examination of the blood, and the discovery of gonococci therein; but as a rule we have to rely on the history and circumstances of development.

An instructive discussion on the pathology of infective endocarditis, introduced by Dr. Washbourn, is recorded in the "British Medical Journal," Nov. 4, 1899.

Cardiac Thrombosis.—Martin and Rennie[1] publish some interesting researches on this subject, with a view of distinguishing *ante mortem* and *post mortem* clots in the heart; and state their belief that cardiac thrombosis is more often the immediate cause of death than a result of the mode of death. They enumerate the various conditions of blood met with in the heart at *post mortem* examinations, including fluid blood; uniform dark clot: partly decolourised clots show an upper pale and a lower dark stratum; large white masses of fibrin, most frequently occupying the right heart and extending up into the pulmonary artery; and lastly, firmly adherent pale masses of fibrin, granular in texture or perhaps softened in the centre. The last two conditions must be produced while the blood is still circulating. While all agree as to the *ante-mortem* formation of the latter of these two, there is no such unanimity about the former. As to the causes of cardiac thrombosis, they found that, out of four hundred and fifty autopsies thrombosis occurred in 42 per cent.: that 80 per cent. of these were cases of pneumonia or some septic condition; and that the same diseases in which thrombosis often occurred were at other times associated with blood which had lost its power of coagulating. To explain this apparent paradox the authors refer to experiments by Wooldridge relating to the effect of solutions of nucleo-albumin upon the blood, and by following up the researches of this observer they arrive at these conclusions: (1,) That the diseases attended with thrombosis are those in which there is considerable disintegration of the cell elements of the body yielding nucleo-albumin; (2,) That when this rapidly reaches the blood, coagulation is apt to occur; (3,)

That a high tension of CO_2 in the blood is favourable to coagulation, and therefore it tends to occur chiefly in the right heart; and (4,) That when the nucleo-albumins are slowly poured into the blood the latter gradually loses its power of coagulating. The paper is a difficult one to abstract shortly, but the above represent the main points. It is worthy of study *in extenso*.

Samways[19] calls attention to the important part played, in defence of the cardiac orifices, by muscular action. He brings forward evidence to show that auricular contraction in each cardiac revolution overlaps the consecutive ventricular systole; and, in so doing, exerts a force which offers great resistance to the reflux of blood from the ventricles back into the auricles. It is only when this is exhausted that the auriculo-ventricular valves come into play, and close. Similarly, muscular contraction largely prevents the reflux of blood from the auricles back into the veins.

Heart Disease and Tuberculosis.—The association of valvular disease and pulmonary tuberculosis has hitherto been regarded as a rare occurrence, and some have gone so far as to assume a sort of mutual antagonism. Potain[20] has re-opened this question, and instead of antagonism, he believes that in many cases there is a causal relation between them, especially in connection with mitral stenosis. He believes that this lesion in some way renders the lung specially susceptible to tubercle; and that in another group of cases pulmonary tubercle may give rise to mitral stenosis by setting up a sclerosing endocarditis. Dr. Sansom[21] also agrees that there is some relation between mitral stenosis and tuberculosis, and suggests that the diminished supply of blood may depreciate the resistance of the lung to tubercle. Dr. Walsham[22] from an analysis of one hundred and thirty *post mortem* examinations of pulmonary tuberculosis found mitral stenosis only in one case, but well-marked signs of heart disease in twenty-one cases, mostly thickening of the aortic and mitral valves. He never established the presence of tubercle bacilli in the lesions. He emphasises the important practical fact, that dulness on percussion with crepitations occurring at the apex of either lung in cases of mitral stenosis must be received with great caution as evidence of pulmonary tubercle, especially with negative results on bacteriological examination of the sputa. Very often such signs have no reference to tubercle, and depend upon conditions which clear up after a time. To sum up—the association between heart disease and pulmonary tubercle is rare, but there is no antagonism; and when it occurs, such association is not specific.

DIAGNOSIS.—Oliver,[23] in an interesting and practical clinical lecture

on "The Pulse and Blood Pressure," thus summarises the leading signs of high and low pressure :—

In increased arterial blood pressure you will observe ; (1,) The artery is felt to be full, and can often be rolled under the finger ; (2,) The ictus or beat of the pulse is prolonged, a quality which is not recognised under a light touch, the swell and duration of the pulsation increasing with the compression ; (3.) The pulse is only obliterated under increased pressure, the finger, however, very frequently failing to recognise this fact when the calibre of the radial artery is reduced ; (4.) The hæmadynamometer amplifies all these tactile signs of the pulse, and defines the blood pressure with certainty and accuracy ; (5.) The blood pressure, arterial and venous, is frequently uniform, or alters but little on changes of posture, and the radial pulse is well sustained when the wrist is elevated above the head (the gravity test) ; (6,) The venous blood pressure may be normal, or may be increased when the peripheral resistance is compensated ; or it may be subnormal, or even so low as to be immeasurable when the peripheral resistance is so excessive as to reduce the high arterial pressure to a minimum or to zero in the veins ; (7,) The second aortic sound is generally accentuated ; (8,) The apex-beat is frequently moved to the left of its normal position ; (9.) The breathing is easily disturbed by slight exertion.

In diminished arterial pressure we have the following signs : (1,) The artery is flaccid, and cannot be felt ; (2.) The beat of the pulse is short and full, a quality easily recognised under the lightest touch,—that is to say, with little more than the mere weight of the finger upon the artery ; (3.) The pulsation is obliterated under slight compression ; (4.) On applying the hæmodynamometer the index begins to pulsate under a low pressure, and soon attains its maximum excursion ; (5.) The blood pressure, arterial and venous, always varies considerably with changes of posture, generally falling with recumbency, but sometimes rising for a time with the assumption of that posture when the arterial tonus is greatly reduced and the radial pulse is greatly lessened, or may even vanish when the wrist is raised above the head ; 6,) The venous pressure is generally normal, or may be in excess of normal, but is sometimes reduced from diminished *vis a tergo*, and not from obstruction of the peripheral vessels.

As an example of what may be learnt by refined percussion, reference may be made to a paper by Dr. Ewart[4] on the recognition of enlargements of the left auricle by percussion. It appears there is an area of relative dulness—"post-cordial," as the author calls it, of triangular outline, elongated, and horizontal in position, having its apex

just below the angle of the left scapula, and its convex base just to the right of the spine. The apex of this area forms a less acute angle when the left auricle is enlarged, and covers more space from above downwards. Within this area is a small semi-lunar patch of more marked dulness, strictly median in position, striding across the eighth and ninth dorsal spines, which are distinctly duller than the adjoining spines (especially the ninth, which the author recognises as the landmark of the left auricle). It measures about 3½ inches in the transverse, and 2½ inches in the vertical diameter. In subjects of mitral stenosis this area is enlarged, especially upwards. The paper abounds with other information to be derived by a similar method of observation.

Influence of the Position of the Body upon the Frequency of the Heart's Action.—A. Langovogo[25] summarises his findings in the following conclusions: (1,) In a healthy person the pulse always increases in frequency after a change from the horizontal to the vertical position; (2,) This increase in frequency is explained by the influence of (*a*,) the contractions of those muscles which are necessary to maintain the body in the vertical position; (*b*,) a fall of the intracardiac and arterial blood pressure, acting reflexly upon the heart ganglia; (*c*,) a fall of intracranial blood pressure depressing the inhibitory centres in the medulla oblongata; (3,) The great variations in the frequency of the pulse which are noted in convalescents are due to the considerable alterations in blood pressure, especially in the brain, which probably depend upon the loss of tone of the arteries in debility from any cause; (4,) In patients with lesions of the heart or arteries the changes in the frequency of the pulse which result from an alteration in the position of the body are governed by the same laws that pertain to healthy persons as long as the ganglia of the heart are susceptible of excitation; (5,) This is usually observed in those cases where compensation is still good; (6,) In rare cases the heart ganglia retain their irritability, although compensation is lost; (7,) In very rare cases the heart ganglia lose their irritability, although compensation is still good; (8,) In such cases the absence of increase in frequency of the pulse when the patient rises from a recumbent position, or the diminution of the pulse rate under these conditions, is a premonitory sign of approaching loss of compensation.

Villani[26] has investigated the causes of reduplication of the second sound in mitral stenosis, and suggests that it is due to a second vibration of the altered mitral valve, due to possible impact of blood, occurring in the first part of the diastole immediately after the second diastolic sound. It is heard before the murmur, so it cannot be due to a vibra-

tion of the valves from the *vis a tergo* of blood driven against their parietal surface ; for in that case, the reduplicated second sound would only be produced when the blood was already in the ventricle.

During the past year Ferranini [27] has studied nine cases of mitral stenosis in which the second sound was followed, after a short but distinct interval, by a third tone which occupied the first part of the long pause. This reduplication was heard loudest at the apex, and the author believes that the additional tone is not a division of the second sound but a third adventitious sound. If it were a part of the second sound there would be no distinct interval between the two tones and they would be heard loudest at the base. He gives the histories of three cases which presented these phenomena. In one of these there was both "partition" of the second sound heard at the base and "reduplication" of the mitral diastolic sound heard at the apex.

The latter or third sound differs rom the second sound in quality, intensity, and duration, being drier, shorter, less loud, and higher pitched than the mitral diastolic sound.

PROGNOSIS.—Beverley Robinson [28] gives a good exposition of the chief considerations in making a prognosis of cardiac disease ; but it is of too general a nature to admit of abstraction. [All questions of prognosis in heart disease appear to centre on these three points : (1,) The existence of dilatation and its amount ; (2,) The probable cause of dilatation, its stationary or progressive character, and its accessibility to control ; and (3,) The extent to which the temperament, habits, occupation, and social position of the patient permit or interfere with treatment.—A. H. C.]

Macfarlane [29] thinks that certain cases of valvular disease should be accepted for Life Assurance, subject to the following rules : (1,) The applicant must not be over thirty-five years of age : (2,) There must be a complete absence in the family and personal history of gout, alcohol, and syphilis ; (3,) Compensation must be good : (4,) The pulse full, regular, and compressible ; (5,) The amount of alcohol restricted to 1 oz. daily ; (6,) He must not be engaged in any hard manual labour. The writer, however, makes exception of aortic regurgitation, mitral stenosis (?) ; and would not accept any case under three years from a known attack of endocarditis.

TREATMENT.—An excellent article by Dr. Sansom [30] sets forth some important points in the treatment of rheumatic diseases of the heart in the early period of their manifestation. With regard to the first cause of rheumatism, without committing himself to the microbic theory, he says that, if true, one of two paths of thought must be taken.

Either the toxins are very slowly evolved, and so for months or years continue to produce morbid changes; or else the toxins first evolved so affect the nervous mechanism as to induce a morbid perversion of metabolism whereby an autogenetic morbid product is formed for an indefinite time afterwards. He speaks of the **Salicyl Treatment** of rheumatism as the best that can be employed; and advises (for an adult) doses of gr. 20 of the sodium salt, with gr. 5 of **Carbonate of Ammonia** every two hours for six doses, or until the temperature has fallen and the pains have ceased; and afterwards less frequently. With regard to pericarditis he says that, before any estimate can be made of any line of treatment, extraordinary variation in nature, extent, and intensity has to be borne in mind. In some cases there are grave symptoms out of all proportion to physical signs; while, in others there is remarkable absence of symptoms, with obvious physical signs. He attributes the difference to the implication or otherwise of the cardiac nerve-mechanism. As to treatment, he rarely or never finds it necessary to suspend the salicylate, when already in use for acute articular trouble. He strongly recommends the bold and prolonged use of a precordial ice-bag.

He then refers to recurrent enlargements and recessions of the heart ("swollen heart"), not necessarily accompanied either with endo- or pericarditis, which represent successive storms of rheumatism. The treatment is the same as for pericarditis. Digitalis is of no use, and may do harm. Threatening heart failure is best combated by **Ammonia** and diffusible stimulants, and by hypodermic use of gr. $\frac{1}{30}$ to $\frac{1}{10}$ of **Strychnia.** He refers to the value of the continuous **Galvanic Current** in some grave cases of cardiac inflammation. He employs about eight cells, with the anode over the nape of the neck, and fixed or stroking application of the cathode to the neck outside the larynx and trachea on both sides, for six minutes three times daily.

The paper closes with some remarks on valvular inflammation, and with a recommendation of similar methods of treatment.

Robardet[31] also speaks highly of the effect of external application of the **Ice-Bag** to the precordia in cardiac inflammation. It should not be too heavy; and a layer of flannel should be interposed between the bag and the skin. To obtain the best results, the application should be continuous, but the patient should be carefully watched at the outset, as the individual reaction is variable.

Treatment of Myocarditis.—Mendelsohn[32] remarks, in this connection, that all excessive bodily or mental exertion must be avoided, as well as the habitual use of coffee, tea, and tobacco. Oertel's treatment, which consists in systematically increasing the power of the heart

by exercises, and reducing corpulency by restricting the fluid drink, acts well in obese but otherwise healthy patients : but since it is impossible to eat much without drinking it is not suitable for debilitated patients, where, especially at the beginning of the complaint, absolute rest in bed is the chief remedy, and restores compensation. Later, each patient must aim at keeping his heart exercised by bodily and mental work while avoiding over-exertion. Other important factors are life in an even temperature and pure air, regulation of the bowels, and frequent, though small, meals. Acute attacks of vertigo, palpitation, dyspnœa, and cyanosis are best treated with **Ether** and **Caffeine.** In chronic cases drugs must be given with caution, and digitalis should be reserved for those where compensation fails : in others **Caffeine, Convallaria Majalis, Adonis Vernalis, Sodium Nitrite** or **Potassium Nitrite** may be tried. Occasionally **Ergot** acts well by its tonic action on the muscles of the smaller vessels.

Digitalis.—Potain [33] says that digitalis should not be given as a rule in the absence of inequality, irregularity and insufficiency of the heart's action ; when there is myocarditis, senile cachexia, or fatty degeneration ; when the stomach is upset : and in aortic incompetence, except with undue acceleration or irregularity of the pulse. Among bad results of digitalis he mentions nocturnal delirium, pallor, cold extremities, trembling, and contraction of the pupil ; melancholia ; and night terrors.

Huchard [34] recommends **Caffeine** as a desirable substitute for digitalis in degeneration of the myocardium ; in the cardiac weakness of acute infectious diseases, and the later stages of interstitial nephritis. It may also be used to continue the diuresis which digitalis has begun. It is also superior to digitalis (combined with other injections) in acute uræmic conditions.

Mercury.—Of late, each year brings its quota of testimony in favour of mercury as an adjuvant remedy in valvular disease of the heart. It is only a revival of a practice which had been allowed to fall into disuse as the result of a reaction from old-fashioned methods of depletion. During the past year, Morrison,[35] Bourgeon,[36] and Yum Busch [37] have written on the subject. Morrison recommends giving gr. $\frac{1}{5}$ to $\frac{1}{3}$ of **Calomel** every two hours during the day-time for four or five days ; and ultimately combining the drug with gr. $\frac{1}{7}$ to $\frac{1}{5}$ of powdered digitalis. The diuretic effect usually manifests itself on the fourth or fifth day. It usually acts better in mitral than aortic cases, and is useless in concurrent nephritis of non-cardiac origin. Mercurialisation or purgation rarely resulted, and readily ceased on stopping the drug for a time. Bourgeon writes in much the same terms, but draws

attention to the marked irregularity of its action, without any obvious reason. He regards albuminuria (presumably from nephritis) as a contra-indication. When, after three or four days, the increase in urine is not maintained, it is better to discontinue the drug.

Ewart [38] describes a new method of treating certain cases of cardiac dyspnœa, and anginal cases for which treatment by baths was inadmissible, by **Inhalations of Carbonic Acid Gas.** Although the method is not one which *primâ facie* adapts itself to current views of cardiac pathology, it must be admitted that the author supports his thesis by strong clinical evidence of its value.

Ulcerative Endocarditis.—The treatment of this affection by **Anti-Streptococcic Serum** continues very properly to receive attention, but hitherto without definite results. There is special need for careful bacteriological investigation of the blood in as many cases as possible, in order to determine the nature of the organisms (if any) with which the disease is associated. The evidence thus far seems to point to the conclusion that its infective nature is related to different organisms in different cases. Michell Clarke [39] records a case in which recovery followed the systematic employment of anti-streptococcic serum. It was given by hypodermic injection of 10 to 15 c.c. On one occasion 20 c.c. were given, but the patient was so faint and weak afterwards, that it was not repeated: 232 c.c. were used altogether. The first injections were followed by a great deal of local pain, tenderness, redness, and swelling; and also, at times, by intense urticaria, which was promptly relieved by gr. 15 of chloride of calcium, given internally. No organisms were found in the blood.

Fox and Lermitte [40] record another case in which the same treatment was adopted, but without success. Staphylococci were found in the blood, but no streptococci.

High Altitude and Heart Disease.—Babcock [41] concludes an article on this subject as follows:—

(1,) All forms of cardiac disease do not contra-indicate sojourn at a high altitude.

(2,) The ill-effects of low atmospheric pressure in some forms of cardiac disease are explicable on the hypothesis of acceleration of venous flow and corresponding quickening of the heart-beats.

(3,) Consequently those forms with which high altitude is likely to prove incompatible are pronounced aortic or mitral stenosis, and regurgitant disease complicated by pleural and pericardial adhesions.

(4,) On the other hand, patients with uncomplicated regurgitant lesions, or arteriosclerosis with or without myocardial changes, may endure low atmospheric pressure without injury.

Aneurysm.—The Roentgen rays appear to be of value in the diagnosis of thoracic aneurysms, in the hands of experts. Williams[42] has thus examined thirty-four cases in which aneurysm was suspected, and one case to determine the size of the heart, when an unsuspected aneurysm was discovered. Of these fifteen had typical aneurysm; six had more or less dilatation of the arch: one showed an outline suggestive of aneurysm, but there was no pulsation found *post mortem* to be due to a mass of glands). The remainder gave normal outlines.

A commendable report of four cases by Eccles[43] with the object of ascertaining the earliest indications of the lesion, suggests that the co-existence of pain in the right arm or back after exertion, with faintness, giddiness, or dread of disaster, occurring under circumstances of fatigue, vibration (as by riding in train or carriage), or forcible bending backwards of the neck, should arouse suspicions of aneurysm.

With regard to the diagnostic value of "tracheal tugging," it is not by itself apparently *quite* conclusive of thoracic aneurysm, as it may occur in connection with a solid mediastinal tumour (Taylor[44]); but when associated with a diastolic shock transmitted to the trachea, aneurysm is practically certain (Hall[45]).

Futcher[45] reports nine cases of aortic aneurysm treated by subcutaneous injection of a 1 per cent. solution of **Gelatin** in normal saline fluid, according to Lancereaux's suggestion. In the early cases, 250 c.c. were injected every other day, but subsequently every fifth day. His results show that in no case was the aneurysm cured; in one it had diminished considerably; and in seven there was appreciable diminution of the pressure symptoms. Great pain often results, lasting as long as six hours, and sometimes a chill and pyrexia.

Maylard[47] reports a case of abdominal aneurysm in which the initial symptoms were those of chronic colitis.

Treatment of Paroxysmal Tachycardia.—Laache[48] recommends **Absolute Rest** during the attack, and application of an **Ice-Bag.** Schott prefers, local warm applications. Digitalis is too slow in action. Subcutaneous injections of **Morphine** tend to alleviate symptoms, but do not shorten the attack. **Suggestion Therapy** is often followed by good results. Of the nervous sedatives, the **Salts of Bromine** are recommended. In organic disease, **Digitalis** is the sovereign remedy.

Treatment of Cardiac Sclerosis.—Huchard[49] divides the treatment of cardiac sclerosis into three stages: That of the excessive arterial tension, with vaso-constriction—the presclerosis stage; that in which the vessels of the myocardium have become implicated—the cardio-

arterial stage; and that in which there is failure of compensation—the mitro-arterial stage. In the first or presclerosis stage the treatment consists of milk diet, the avoidance of all stimulating beverages as tea, coffee, and alcohol, also of all foods containing ptomaines; the reduction in the amount of liquid drunk, except that the diuretic mineral waters are advocated, with a small dose of lycetol—the tartrate of dimethyl piperazine. Gymnastic exercises are also indicated, with general and abdominal massage. At this stage digitalis should never be used, although diuretics generally are indicated. The salts of potassium, too, are unsuitable; among the best diuretics are **Caffeine** and **Theobromine.** Purgatives, and especially saline purgatives, are valuable in this first stage. Occasionally small doses of **Nitroglycerin**, 3 drops of a 1 per cent. solution, three to five times a day on ten or fifteen days in each month are of service, but iodide of potassium is useless.

The following should be stringently interdicted: All agents capable of increasing the arterial tension—such as ergot, digitalis, atropine, and caffeine in large doses; all agents tending to diminish the purification of the blood by the kidneys, such as antipyrine, atropine, and morphine; all sulphurous and highly chlorinated waters and baths containing compressed air or carbonic acid gas, while dwelling in high altitudes, are contra-indicated. Tobacco and all stimulating drinks must be avoided. The treatment of the second or cardio-arterial stage consists in continuing the dietetic and hygienic measures of the first, and in addition the administration of moderate doses of the iodides, particularly the **Iodide of Sodium** with medium doses of **Nitro-Glycerin.** If symptoms of heart failure should supervene recourse must be had to cardiac tonics as digitalis and the sulphate of sparteine. In the third or mitro-arterial stage the treatment is that of failing compensation, a strictly milk diet, diuretics, especially theobromine, and large doses of digitalis or digitalin. To combat the dyspnœa due to the absorption of toxic material from the alimentary tract, and secondarily the insomnia of this stage, a rigidly milk diet is necessary and theobromine should be administered. If the dyspnœa be due to cardiac asystole digitalis should be given, if due to cardiac thrombosis, rest, digitalis, and small doses of opium are to be prescribed; if due to acute œdema of the lung a copious venesection should be practised, and if from pleural effusions paracentesis should be performed. It is useless to treat the arrhythmia of myocardial weakness with digitalis. In the first or presclerosis stage it is possible by the measures described to check and even to cure the disease

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HEART (Surgery of the). *Priestley Leech, M.D., F.R.C.S.*

There have been several articles on this interesting subject published during the last few months.

The most important is a monograph by Loison giving tables of cases.[1] The tables are divided as follows: The first series include twenty-three cases of wounds by needles and pins; nine recovered, and in two of these cases operation failed to get the needle. In one the fifth rib was resected, the pericardium opened, and the pleura accidentally incised as well; pneumothorax and pleural effusion followed but the patient recovered.

The second table includes ninety cases of wounds by piercing and cutting instruments (knife forty-eight, dagger eight, less frequently sword, bayonet, lance, knitting needle, etc.), seventy-nine of these cases ended fatally; of the eleven recoveries ten recovered after operative measures, viz., incision and plugging of the pericardium three; incision and drainage of a secondary pyo-pericardium two; suture of the pericardium three; suture of the heart and drainage of the pericardium one; and suture of the heart and of the pericardium one.

The one recovery without operation was murdered a year later; a cicatrix was found in the ventricle and the pericardium adhered to the scar in the thoracic wall.

The third series includes one hundred and ten cases of injury from firearms. The mortality is high, only three cases of which any after history is given having recovered, which were apparently wounds of the pericardium and not of the heart itself.

The fourth series includes fifty-four cases of wound and rupture of the heart by contusion of the chest; three recoverd, two without treatment and one after opening of the pericardium to let out blood three weeks after a football accident.

Prognosis is not always gloomy nor is surgical treatment useless. The diagnosis is difficult and delicate, but the symptoms are not more uncertain than similar lesions of the peritoneum and various abdominal viscera.

Minni[2] has found from a careful study of statistics that only 19 per cent. of the cases of penetrating wounds of the heart are immediately fatal; operation in these cases gives the best possible hope of saving life, provided no time be lost in resorting to it. He gives details of eight cases treated by suture, one in his own practice; three out of the eight cases recovered.

Wehr[3] from experimental studies on animals on the technique of operations on the heart comes to the following conclusions:—

(1,) The heart must be reached through a large wound if the operation is to be successful on a wounded and bleeding heart. He found it difficult to operate unless sufficient room was given.

(2,) Some method is essential by which the heart can be freely exposed and the wound enlarged in any needed direction.

(3,) Compression of the heart to make the operation bloodless is dangerous. He found that in dogs it produced death and believes it should be strenuously avoided in the human subject. He proposes the following method for operating on the heart:—

Commence incision just above the fourth rib on the right border of the sternum and pass across the sternum to above the cartilage of the fourth rib on the left side. The incision curves across the fourth, fifth, and sixth costal cartilage and turns inwards, transversely, through the seventh, resecting the xiphoid at its base. Resection of the costal cartilages is done obliquely from without inwards; the sternum is sawn through without injury to the mediastinal periosteum, and the whole skin, muscle and bone flap are turned up breaking the right costal cartilages. In resecting the ribs a button-pointed bistoury is used to avoid injury of the internal mammary artery.

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HEPATIC ABSCESS. (See "Liver.")

HERNIA. *Walter G. Spencer, M.D., M.B., F.R.C.S.*

Nomenclature.—The subject would be made more clear if the terms and names of the various operations were employed more uniformly. Such words as "congenital," "infantile," and "acquired" are used sometimes for anatomical conditions, sometimes in relation to the time of origin of the hernia. The various operative procedures are subjected to endless modification in the hands of different surgeons until they become indistinguishable. Owing to the frequency of operations undertaken for the cure of hernia, much modification has been introduced into the classical surgical anatomy of hernia, as taught to the student in the dissecting room.

Hernia in Children.—Langton[1] opened a discussion on the treatment of hernia in children, *i.e.*, in those under five. Practically these were nearly all of the inguinal form, and the great majority in boys, especially on the right side, owing to the later closure of the tunica vaginalis on that side.

Total Cases, 12,896	Boys, 11,833	Right side	7,801
		Left side	2,851
		Both sides	1,171
	Girls, 1,063	Right side	593
		Left side	360
		Both sides	110

He was of opinion that hernia was to be prevented in infants by proper feeding, and in children over three by muscular exercise. He did not attribute to phimosis a very active part in its production, instancing Jews in whom hernia was common. Indeed the crying and straining provoked by circumcision might aggravate the lesion. He preferred a light spring truss covered with rubber to the skein wool truss, especially for cleanliness and durability. An operation was indicated for the relief of strangulation, for irreducible or incompletely reduced intestine or omentum, for fluid persisting in the sac, when a truss did not retain the hernia, or when this treatment was rendered impossible by the incapacity of the parents, in which category Eve thought must be included the greater number of hospital cases. Langton also would operate when the hernia was not cured by wearing a truss for three or four years Eve thought that many of the cases nominally cured by a truss, recurred later on, whilst the recurrence

after his operation had been only one out of twenty. Edmund Owen and Robert Campbell attributed more influence in the causation of hernia to phimosis—they liked the worsted truss, as did also Heaton. Whitelocke had discarded its use, and McAdam Eccles recommended a carefully fitted spring truss, and would delay operating, if possible, until the child was five years.

Hamilton Russell[2] expressed strongly the opinion that the hernia of young children was always congenital as regards the time of origin, not "congenital" in the anatomical sense. As he mentions that he had separated the sac from the vas deferens in the course of sixty operations, it is difficult to understand how he considers the sac to have been always formed by the unobliterated tunica vaginalis.

Fraenkel[3] is an extreme advocate of the operation in children. Of sixty-eight cases, sixteen were infants at the breast, four being strangulated, but twelve reducible, the youngest being two months. Karewski[3] is more moderate, and advocates trusses until the age of three, when, if still uncured, an operation should be done.

Methods of Curing Hernia.—Bassini's and Halsted's[4] operation is very generally adopted, its essential feature, the displacement of the vas, being believed to prevent recurrence. But orchitis, atrophy, and painful testicle, also scrotal hæmatoma have followed this displacement in the hands of some surgeons. I believe that MacEwen's operation,[5] with occasional modification, is a most satisfactory operation, and a real cure, recurrence not being met with in my experience.

Kangaroo tendon is rightly considered the best material for the buried sutures, and by splitting the tendon the objection as regards expense is removed. Catgut sometimes sets up severe suppuration, silk sutures sometimes work out through a sinus, silver wire and silkworm sutures, as they remain entirely unabsorbed, may act as foreign bodies. Indeed, some have returned to older methods, leaving the wound open simply filled with gauze, or inserting deep interrupted or continuous wire sutures with the ends fixed outside the skin by buttons or rods. But these are retrograde measures compared with the suture of the abdominal wall in stages by kangaroo tendon buried sutures. *Femoral hernia* is now generally treated by fixing the sac or stump of the sac behind Poupart's ligament, and drawing the pectineus muscle upwards towards it and the conjoined tendon.[6]

Rarer Forms of Hernia.—Moynihan,[7] in the Arris and Gale Lectures, delivered at the College of Surgeons, describes the *bilocular forms of hernia*, including the inguino- and cruro-properitoneal kinds, and interstitial hernia, also encysted hernia and hernia of the bladder. Under bilocular hernia he includes those cases in which the sac has

PLATE V.

HERNIA.

Fig. A.

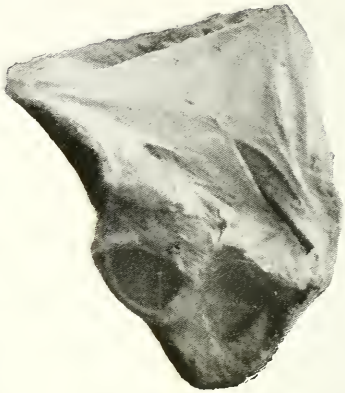

Fig. B.

Fig. C.

Fig. D.

two loculi communicating by a single orifice with the abdominal cavity. The first variety, the properitoneal, or intra-parietal form, has the inner loculus extending upwards and outwards towards the anterior superior spine (*Plate V, Fig. A*), or downwards or backwards towards the inner part of the iliac fossa, or downwards and inwards beside, or in front of the bladder (*Fig. D*). The outer or lower loculus may extend downwards towards the scrotum, or remain interstitial or intra-parietal. It is generally congenital, arising from one of the peritoneal fossæ on the inner aspect of the abdominal wall, but may be acquired, either by reduction *en masse*, or by wearing a truss.

Interstitial, or intra-parietal hernia (*Figs. B, C*) is generally connected with an undescended testicle, which blocks the way and prevents a descent into the scrotum, but where the position of the testis is normal, also in women. Macready has supposed a congenital thinness of the abdominal wall, but Moynihan thinks this the effect rather than the cause.

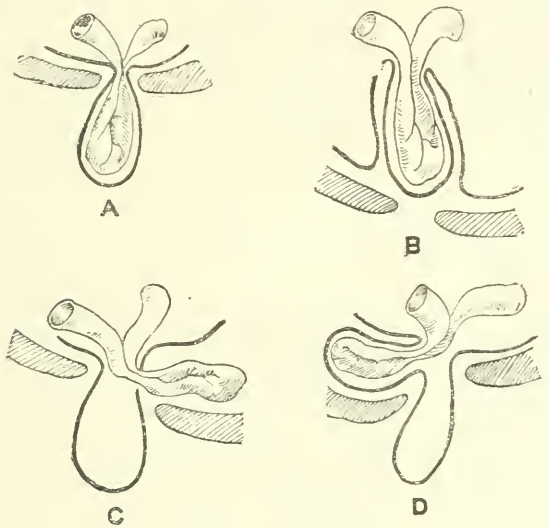

Fig. 5.—Reduction in mass.

In bilocular hernia strangulation may occur (*Plate VI, Fig. E*) at the common opening of the two sacs into the abdominal cavity, at the neck of the properitoneal sac, or at the neck of the inguinal sac. Incomplete reduction or reduction *en masse* is liable to take place. The

surgeon must reach the neck, and as this is high up a median abdominal incision may be preferable to an excessively long inguinal one.

Reduction *en masse* (*Fig.* 5) is divided into true and false forms. Of the true there is reduction (*A*) into a properitoneal or interstitial sac; reduction, sac and all, into (*B*) the subperitoneal tissue; also reduction (*C*) after rupture or (*D*) division of the neck of the sac. False reduction *en masse* is an appearance only, fluid escapes, but with no or only partial reduction of bowel, which in the main continues strangulated, or swollen and paralysed.

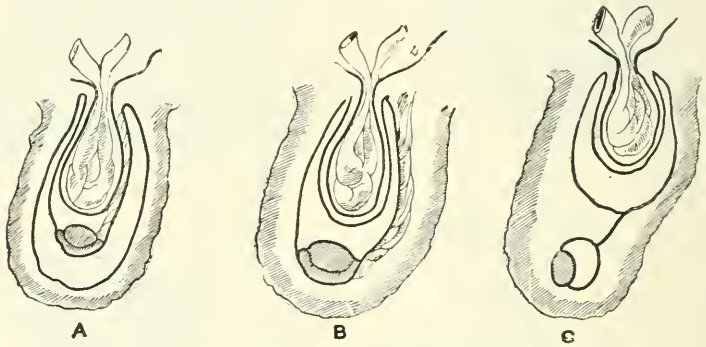

Fig. 6.—Encysted Hernia.

Encysted Hernia (*Figs.* 6, 7, 8), includes those hernias in which both the sac and its contents are found within the tunica vaginalis, owing to the septum of parietal peritoneum (*Fig.* 7) being invaginated into the cavity of the tunica vaginalis. Clinically, they appear as hernias with hydroceles. There are two varieties, the testicle being in one case, *Fig.* 6 (*A*, *B*), *Fig.* 7 (*A*, *B*), within the hydrocele, in the other *Fig.* 6 (*C*), *Fig.* 8 (*A*, *B*, *C*, *D*), outside. There is nothing particular in the diagnosis except that the whole of the parietal tunica vaginalis along with the sac should be removed.

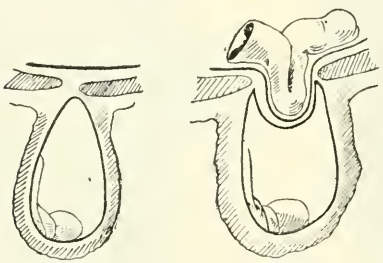

Fig. 7.—Formation of Encysted Hernia (first variety).

PLATE VI

HERNIA.

Fig. E.

Fig. F.

Hernia of the Bladder.—There are three varieties described : (*Plate VI, Fig. F*, also *Fig.* 9,) the intra-peritoneal, occurring in an oblique inguinal hernia, in which the pouch is completely covered by peritoneum; the para-peritoneal form occurs with a direct hernia, and lies on the inner side of the sac, beneath the peritoneum, it often appears as a thick mass, exposed on stripping up the sac, the outer wall of the bladder being often covered with fat; the extra-peritoneal variety is rare. If care is not taken to exclude the bladder pouch, when stripping up the sac, it may be included in the ligature. The pouch is liable to complications, the formation of a stone or of an abscess. Cystocele is supposed to be caused by over-distension of the bladder, or to its being dragged on by lipoma, intestinal or omental adhesion. In my opinion its presence is to be anticipated

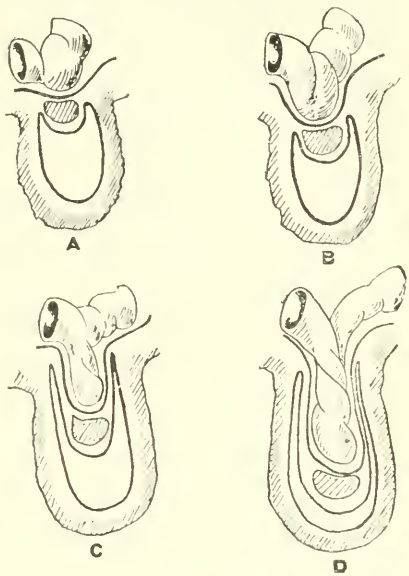

Fig. 8.—Formation of Encysted Hernia (second variety).

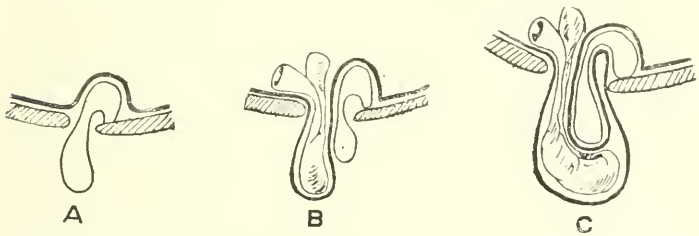

Fig. 9.—Hernia of the Bladder; A, Extra-peritoneal B, Para-peritoneal; C, Intra-peritoneal.

when a primarily direct hernia is found with the deep epigastric and vein crossing to the front and outer side of the sac, owing to

the pouch of peritoneum, internal to the deep epigastric artery, drawing upon the wall of the bladder. I have had five such cases.

Crural Cystocele has been seen in thirty women and in three men; pregnancy in the former and enlarged prostate in the latter favour its occurrence.

Makins [8] and J. Hutchinson, jun.,[9] have described cases of pro-peritoneal, pre-vesical hernia.

Congenital Inguino-Perineal Hernia.—Coley [10] mentions four cases in which a hernia had followed an ectopic testis into the perineum.

Hernia into the Pericardium.—McDowell [11] found at the autopsy on a case which had died suddenly without preliminary symptoms, a gangrenous coil of ileum in the pericardium, constricted at the opening into the sac.

Ischiatic Hernia.—Giron [12] gives a drawing of a partially reducible hernia in a woman's buttock the size of a child's head. It had existed for twelve years in a woman aged fifty-five, who had had eight children. Such a case is best treated by abdominal section with the pelvis well raised.

Hernia cruralis prevascularis after forcible reduction of congenital dislocation of the hip. Narath [13] reports six cases of children who having been subjected to forcible manipulation without external wound, developed in consequence a hernia, which bulged below Poupart's ligament in front of the blood-vessels. The cause was probably a tearing between the sheath of the blood-vessels and Poupart's ligament.

Hernia following Operation for Appendicitis.—Harrington [14] personally examined two hundred and thirty-six cases some time after recovery and found twenty-seven cases of true hernia, and in twenty-five bulgings of the scar. Most of them were found among the sixty-three cases in which no sutures had been inserted, and to a less extent among the eighty-eight which had been partly sutured and drained; eighty-five of the two hundred and thirty-six had been completely sutured at the operation. Thus hernia is most likely where suppuration has occurred. He considers that a second operation satisfactorily cures and is a much better treatment than a truss both for the true hernias and also for the bulgings.

Tuberculosis of the Hernial Sac.—This is no doubt rare, but several cases have been recently recorded.[15] Bright and Wilie [16] also describe such cases which were strictly limited and not part of general peritoneal tuberculosis. The sac must be completely excised.

DESCRIPTION OF PLATES V AND VI.

Fig. A.—Properitoneal hernia seen from behind. Backward and outward diverticulum of the sac. An inguinal hernia was strangulated; operation was performed, and the hernia was found to be congenital. Reduction was effected. After death it was seen that reduction had occurred into a sac, shown in the figure, below the internal abdominal ring, outside the peritoneum. The specimen is labelled "Reduction in Mass." The testis is retained. (St. Bartholomew's Hospital Museum, No. 2117.)

Fig. B.—The inguinal region of a patient who suffered from right interstitial hernia. The rod leads to a large diverticulum from the sac, lying under the external oblique. The sac can be seen in the upper cut edge of the specimen. (St. Bartholomew's Hospital Museum. No. 2157A.

Fig. C.—Interstitial hernia. Extra-parietal form. The sac is hour-glass in shape, the constriction being situated at the external ring close below which in the lower sac is seen the undescended testis. The upper sac extends upon the anterior abdominal wall for a distance of two inches above the widely-dilated internal abdominal ring. "T. S., aged thirty-six years, was admitted under Mr. Cock with symptoms of strangulated hernia of twenty-four hours' duration. He was found to have one tumour in the scrotum and another in the groin. The scrotal tumour was reduced by taxis. On the following day the patient died, and at the autopsy nearly a foot of ileum was found strangled in the upper sac." (Guy's Hospital Museum, No. 1120.)

Fig. D.—Properitoneal hernia. Ante-vesical form of diverticulum. The orifice is the ostium abdominale; one sac passes down the inguinal canal, and the diverticulum, seen opened, extended "downwards into the pelvis, by the side of the urinary bladder to which it was attached." (St. Bartholomew's Hospital Museum, No. 2118.)

Fig. E.—Bilocular hernial sac. "Two thin membranous sacs, communicating with each other and having a common opening at what appears to be the internal abdominal ring. The sac contained a hernia and a quart of 'ascitic' effusion." The identity of this condition with bilocular hydrocele is at once apparent. Guy's Hospital Museum, No. 1159.

Fig. F.—Vesical Hernia. Sir Astley Cooper's case. The bladder is covered by peritoneum except at the inner and posterior part. Para-peritoneal form. (Guy's Museum, 1170.

REFERENCES.—[1] "Brit. Med. Jour.," Aug 19, 1899; [2] "Lancet," Nov. 18, 1899; [3] "Brit. Med. Jour.," March 31, 1900; [4] "Jonn. Cent. f. Chir.," 1899, p. 65; [5] "Ann. Surg.," Aug., 1886; [6] Gordon, "Brit. Med. Jour.," 1900, i., 1338; [7] "Lancet," Feb. 24, 1900; "Brit. Med. Jour.," March 3, 1900; [8] "Trans. Med. Chir.," 1899, vol. lxxxii., p. 308; [9] Ibid., p. 321; [10] "Ann. Surg.," Sept. 1899; [11] "Brit. Med. Jour.," 1899, i., p. 16; [12] Ibid., 1899. ii., Epit. 46; [13] "Cent. f. Chir.," 1899; "Beit.," 165; [14] "Boston Med. and Surg. Jour.," 1899; [15] "Trans. Path. Soc.," 1892, p. 77; Cent. f. Chir.," 1892, p. 154; "Rev. de Chir.," 1891, March 10; [16] "Brit. Med. Jour.," 1899, ii., 1740.

HERPES PROGENITALIS. *T. Colcott Fox, M.B.*

Arthur Cooper[1] in *a note on H. progenitalis from a diagnostic point of view* points out that in its typical form of a group of small vesicles on a red base and surrounded by a red areola, frequently accompanied or preceded by itching or burning, and disappearing in a week without implicating the related lymph glands, this herpes is

easily diagnosed. Cooper points out that instead of drying up into characteristic thin scales, the vesicles, when situated between moist surfaces, may end in erosions. Other irregularities in its course, may be due to ulceration from complicating balanoposthitis or from contact with urine, or from some obscure dyscrasia, or from irritative treatment. When ulcers form, the related glands may be irritated, and the diagnosis from ulcus molle or syphilitic chancre becomes necessary. With a glass the confluent ulcers may often disclose a polycyclical outline. Of course the herpetic lesions may be inoculated with other virus, and so give rise to multiple chancres.

With regard to irregularities of distribution, Cooper points out that the eruption may be discrete and not grouped, and that single-spot herpes may occur.

Herpes Zoster or Zona.—We may refer our readers to the original and instructive article by Head in Clifford Allbutt's "System of Medicine," in which he discusses the distribution of zoster in connection with diagrams, and gives the results of his seventeen post-mortem examinations. He concludes that zoster may be a direct symptom as in myelitis or caries, or tabes, but is generally an acute specific disease of the nervous system, analogous to acute anterior poliomyelitis.

REFERENCE.—[1] "Brit. Med. Jour.," May 19, 1900.

HICCOUGH. *Græme M. Hammond, M.D., New York.*

Traction on the Tongue for.—Noir [1] refers to the frequency of hiccough as a dangerous and even fatal accompaniment of certain diseases. He regards it as a series of convulsive seizures due to toxic causes. After speaking of the various methods which have been recommended for its relief, he concludes that the simplest and most efficacious plan is the one recommended by Laborde. It consists of vigorous traction applied to the tongue. He refers especially to two cases in which this was practised. One case was a girl, over six years of age, who had had violent hiccough for six hours and who was in consequence greatly exhausted. Traction on the tongue continued for a minute and a half arrested the symptom at once. In the other case the patient was diabetic, tuberculous, and cachectic. The hiccough had been severe for several days. Traction on the tongue for about two minutes completely arrested the spasm. It reappeared several days later, but again ceased when the patient practised the same method on himself.

REFERENCE.—[1] "Brit. Med. Jour.," March 10, 1900.

HIP JOINT (Amputation of). *Priestley Leech, M.D., F.R.C.S.*

Chavasse[1] gives a paper on this subject with a table of fifteen cases. The two main risks are hæmorrhage and shock. The two methods he has used are the external racket incision and the method by shaping from without inwards anterior and posterior skin flaps and division of the muscles and vessels high up as close as possible to the pelvic bones by a circular incision. For restraining hæmorrhage he has employed Wyeth's plan with steel pins ; compression of the aorta with a pad and a thick elastic tourniquet and digital compression of the femoral by the fingers of a skilled assistant. By the last method more blood is lost, mainly from the vessels posterior to the joint. The second method is more useful in children than adults. The shock is always severe but may be minimised by certain routine observances, viz. : by having the operating room warm (65° F.) ; hot water tank or bed for patient to lie on, and envelop extremities and trunk in cotton wool. Have everything in readiness to inject saline fluid intravenously, even to having the basilic vein of the arm on the opposite side to the operator dissected out ready. Eleven recovered out of fifteen operations on fourteen patients, a mortality of 26·6 per cent. ; six cases being for sarcomatous growths and nine for bone disease. Wyeth's figures (if the cause of death attributable only to the operation be taken) give a mortality of 9·5 per cent., and Chavasse thinks that we might in suitable cases urge operation rather than procrastinate as has hitherto been the rule.

REFERENCE.—[1] "Lancet," July 21, 1900, p. 154.

HIP JOINT (Operation for Disease of).

Priestley Leech, M.D., F.R.C.S.

A. E. Barker[1] has an interesting article on the after history of forty-one cases of destructive hip joint disease treated by operation. He compares these cases with a series of forty-five cases published by Mr. John Croft.[2] In both Croft's and Barker's cases "before operation was resorted to, in any case every known reliable treatment suitable to the condition had been tried to arrest the progress of the disease." In Barker's cases this included, as a rule, fixation of the limb in a Thomas's hip splint, tonics, cod-liver oil, fresh air and the best food procurable, and this treatment was carried out for months and often for years. In no case was operation undertaken until there was evidence of extensive formation of matter in the joint and, in all, grave changes were found in one or both bones. Barker has never operated for early disease of the hip joint. He has tried to operate before sinuses had formed and the cavity become infected with septic organisms, as he believes this influences unfavourably the immediate

and remote results of such operations. As regards the mortality of the two series of cases, Mr. Croft's gave a mortality of 13·5 per cent. ; in Mr. Barker's cases *none* have died before leaving hospital ; three deaths only occurred from any cause in the cases he was able to trace during the twenty-two years over which the series extends. Out of the forty-one cases eleven were not traced. With the possible exception of two cases, all were operated on for chronic tuberculous disease of the joint.

These results compare very favourably with those of an earlier date, as Croft's mortality of 13·5 per cent. was due directly or indirectly to the operation, whereas of Barker's three deaths one occurred twelve months, another seventeen months and the third five years after operation. The functions of the limb operated on were, with two exceptions, excellent years afterwards, the patients walking well and without pain ; shortening was, of course, present, but this occurs in cases which heal without operation.

Barker's routine treatment, since 1888, has been as follows : A two and a half inch anterior incision into the joint, flushing out with hot sterile water ; removal of remains of head of femur and sequestra with the flushing gouge aided, if necessary, by the lock saw. Acetabulum gouged clean even into pelvic abscesses if necessary. All the operation cavity scraped and flushed clean with sterile water and then dried. A small quantity of iodoform emulsion is poured in and any excess squeezed out. Closure of wound without drainage. When hot abscesses were present a drain-tube was, as a rule, necessary, and where sinuses are present these are excised, but drainage is also, as a rule, necessary.

A list of the individual cases is given. The results are certainly better than one would have anticipated.

REFERENCES.—[1] "Lancet," May 26, 1900, p. 1,499 ; [2] Ibid., Dec. 27, 1879, p. 943.

HUMERUS (Fracture-Dislocation of).

Priestley Leech, M.D., F.R.C.S.

Farquhar Curtis [1] has a good paper on this subject, and his conclusions are as follows :—

(1,) In fracture of the upper end of the humerus with displacement of the upper fragments from the glenoid cavity, when proper attempts at simple reduction and general anæsthesia have failed, operative measures should be resorted to, unless shock, other injuries, or extensive damage to the soft parts about the shoulder justify delay. A delay of from one to four weeks will not impair the result.

(2,) Anterior displacements require an anterior incision, sub-glenoid

or posterior displacements require a posterior incision, preferably by Kocher's method.

(3.) The head should be restored to its place, if possible, and resection should only be resorted to when reduction is impossible, or would require such extensive damage to the parts or such prolongation of the operation as to increase the dangers of wound infection or of shock.

(4.) Resection will probably give a better result in fracture of the anatomical than in that of the surgical, but reduction is to be preferred in both cases.

(5.) Asepsis is an indispensable requirement for a good functional result, and these operations must not be undertaken except under aseptic conditions.

(6.) Motion should be begun in the joint as soon as the wound has healed, in ten or fourteen days after the operation.

REFERENCE.—[1] "Ann. Surg.," March, 1900.

HYSTERIA. *Grœme M. Hammond, M.D., New York.*

The Colon Bacillus as a remedy for.—Walter[1] has originated a most remarkable treatment for hysteria. He says that if a massive culture of the colon bacillus, the original colony of which is taken from a non-infectious source, be administered to a case of hysteria of the active or convulsive type (latent or post-hysterical phenomena, such as paralysis, being excluded) the symptoms will disappear in from twenty-four to forty-eight hours, and the patient will be restored to health. Two views are given in regard to the *modus operandi:* one assumes the existence of a specific organism causative of hysteria not to be differentiated from the bacillus coli communis; the other is that in the intestinal tract of predisposed subjects the bacillus may assume toxic properties. In either event the offending organism is displaced by the treatment recommended. To prepare the remedy a culture is obtained from the stomach or intestine of the hog or other animal, and after a pure culture has been fully developed it may be scraped off and administered in capsules. A well matured growth will make from three to six doses, two or three of which should be given in twenty-four hours, care being taken to have the growth fresh.

REFERENCE.—[1] "Med. Prog.," July 28, 1900.

IMPETIGO. *T. Colcott Fox, M.B.*

Sabouraud[1] contributes an elaborate clinical and bacteriological study of impetigo in which he comes to the conclusion that preceding authors have studied different types, and that the latter probably

correspond to diverse microbian infections, and hence the great confusion that reigns upon the subject.

Clinical study has shown him that impetigo, as commonly known, comprises two different maladies. The one is the *Impetigo contagiosa of Tilbury Fox*, characterised at the outset by fugitive erythematous taches, which become flat phlyctenulæ containing a serous fluid. The rupture of these fugacious phlyctenulæ give issue to a serum which forms more lasting amber-coloured, discoid, nearly crystalline, crusts, disappearing later by subjacent epidermic reparation without leaving scars (see *Plate VII*).

The second malady, also called impetigo, and almost universally confounded with the first, is the *Impetigo of Bockhart*, characterised in all its forms and localisations by rounded pustules, each centred by a hair and containing from the first a yellow pus. It is a malady more apt to relapse and more sudden in its appearance, tending to leave in its train folliculites and boils. These two maladies both have varieties, multiple forms, and complications, which for the most part are not the same. The I. of Bockhart may complicate the I. of Tilbury Fox. What is known as *Ecthyma* in France is attached to I. of Tilbury Fox, much as *Folliculites* are to the I. of Bockhart.

Further, Sabouraud finds that the presence of the streptococcus of Fehleisen is constant in every lesion of I. contagiosa of Tilbury Fox ; in the young lesion in a state of purity, but when the contents pass from the serous state to become opalescent and puriform, the staphylococci are also present. The streptococcus is not obtained in abundance on any known culture medium, whilst staphylococci are easily grown. Sabouraud therefore selects media and conditions which are unfavourable to the latter. He draws into a sterile pipette a droplet of the impetigo serum and adds by aspiration 1 or 2 cubic centimètres of ascitic serum or neutral bouillon, or best of all a mixture of ascitic serum and bouillon. The pipette is then sealed and placed in a temperature of 37° C. This research confirms the observations of Crocker, Kurth, Brochet, Balzer and Griffon, and some late observations of Schwenter-Trachsler and Unna. The impetigo of Bockhart may occur in this affection as a complication.

The impetigo of Bockhart is, on the other hand, due to the golden staphylococcus of Rosenbach. It can evolve as scanty or profuse eruptions upon a limited or more extended region. It may arise with apparent spontaneity or secondarily to a traumatism or pre-existing eruptions.

Both the staphylococcic and the streptococcic infections of the

PLATE VII

Impetigo Contagiosa

epidermis have each an immense cortége of immediate derivates, which owe to details of site or structure different names. Mixed forms are also found, and secondary infections, which altogether make up a very complicated picture. Sabouraud regards these two infections as the centre and heart of cutaneous bacteriology.

Marié Davy[2] finds cultures made from the centres of pustules reveal the presence of a pure streptococcus, but whether a special organism or only an attenuated one is doubtful. Inoculation of these organisms reproduces the characteristic pustule with its organisms. On the other hand when the borders of the pustules are investigated, the streptococcus is not so frequently found and the cultures are rapidly invaded by staphylococci. He concludes that the streptococcus is the real causative organism of impetigo.

Gilchrist[3] as the result of the investigation of seventeen cases of I. contagiosa, isolated the streptococcus pyogenes in every case and ten times as the only organism present, whilst in seven cases the golden staphylococcus was also found. Exceptionally other organisms may be isolated, as the white staphylococcus and pseudo-diphtheritic bacillus. Only once by inoculation were lesions of typical impetigo produced. In two cases of *Ecthyma* a fine culture of streptococcus pyogenes was obtained. In twenty cases of *Furuncle* the golden staphylococcus existed alone and constantly.

Blaschko has for some years systematically carried out cultural experiments in impetigo contagiosa and always found a staphylococcus resembling the common golden or white forms. Inoculations in man with the pure cultures of the third or fourth generation always produce typical "pustules" of impetigo. Nevertheless this staphylococcus seems to be special, for the common golden or white staphylococci set up *pustules*, boils, and folliculites, whereas the staphylococcus of impetigo sets up, not a pustule, but a serous inflammation.

Kaufmann[4] has pursued this investigation and comes to the conclusion that the staphylococcus producing serous blisters is quite distinct. He sums up the distinctions.

Scholtz and Raab,[5] assistants in Prof. Neisser's dermatological clinique at Breslau, in a record of researches upon the bacteriology of impetigo contagiosa (I. vulgaris of Unna) start by pointing out that all authors see in it an infection of the superficial layers of the skin by pyogenic microbes, but opinions diverge totally as to the particular cocci in action. Is it a specific coccus, a streptococcus or staphylococcus, or an association of several? With regard to the specific character of the coccus they criticise the conclusions derived from the inoculations of Unna and Kaufmann, and hold that such inocula-

tions should be controlled by simultaneously inoculating the golden staphylococcus. Superficial inoculation may produce impetigo, but to set up a boil the coccus must be made to penetrate deeply by rubbing. The serous or slightly troubled contents of primary vesicles, and the exudation under crusts, have given Scholtz and Raab, by culture, a mixture of golden staphylococci and streptococci, but in some cases pure cultures of either have been obtained, and a case of Herxheimer's I. granulosa furnished a streptococcus. They conclude that in special conditions of inoculations, such as scratching by the nails, the staphylococcus and streptococcus generally act in association, and upon a skin in a state of receptivity, but in specially favourable conditions either organism alone suffices to produce impetigo.

REFERENCES.—[1] "Ann. de Derm. et de Syph.," Jan., March, and April," 1900; [2] "Arch. de Med. des Enfants," May, 1899; p. 257; [3] "Trans. Amer. Derm. Assoc.," for 1899, p. 87; [4] "Arch. f. Derm. u. Syph.," 1899, p. 297, Band xlix.; [5] "Ann. de Derm. et de Syph.," April, 1900.

INCONTINENCE OF URINE.

Henry Dwight Chapin, M.D., New York.

Dr. L. Phillips[1] finds **Antipyrine** to be the most satisfactory drug for general use in functional incontinence of urine in children. He gives one nightly dose of 8 or 10 grains to a boy seven years old, and gradually increases the dose. He has continued to do this for a period of four months without production of an exanthem or other bad symptom.

Dr. L. Freyberger[2] gives statistics proving that enlarged tonsils and adenoids do not produce enuresis, as has lately been claimed.

When enlarged tonsils and adenoids obstruct the breathing, or are the seat and source of constant or recurrent irritation, they ought to be removed, and that as soon as possible; but in cases of enuresis coupled with tonsillar hypertrophy one should have recourse to tonsillotomy or adenoidectomy only when all other possible organic or constitutional causes can be excluded, unless the operation is imperatively demanded by one of the causes which have just been enumerated.

D. F. Huber[3] gives an exhaustive classification of enuresis as follows:—

Varieties: Nocturna (common)—Diurna—Continua.

Three factors: (*a*,) Condition of sphincter; (*b*,) Bladder; (*c*,) Innervation.

(1,) MALFORMATIONS { Small meatus, small bladder (natural or acquired). Hypospadia (perineal). Exstrophy of bladder. Epispadia.

(2.) Organic Disease of Nervous System		Idiocy, cerebral palsy, meningitis, ch. hydrocephalus, myelitis, injuries of cord, and Pott's disease, with compression or inflammation of cord.
(3,) Functional (?) Disorders		Epilepsy, chorea, diabetes (mellitus and insipidus). Hysteria, neurasthenia, anæmia resulting in poor innervation and muscular development.
(4,) Weak Sphincter		(*a*,) Infantile condition persisting. (*b*,) General muscular incompetency, or (*c*,) Result of exhausting diseases, lowered vitality, general anæmia. Neurotic state.
(5,) Irritability of Bladder	(*a*,) Inflammatory processes	Urethritis, balano-posthitis, vulvo-vaginitis, cystitis, nephritis, pyelitis, rectal catarrh, ch. inflam. of prostatic portion and neck of bladder due to masturbation.
	(*b*,) Local	Stone, polypoid excrescences at neck of bladder, hyper-acid urine, excess of urates, oxalate uric acid, concentrated urine, excess of phosphates due to digestive disturbances and imperfect assimilation. Bacteriuria.
	(*c*,) External (Reflex)	Periurethral and perivesical inflam. Phimosis, preputial adhesions and balano-posthitis, urethral inflam., vaginal catarrh, rectal catarrh, irritation due to pin-worms, constipation, hardened fæces in rectum, fissure, and polypoid of rectum.
	(*d*,) Distended bladder	Excessive secretion of the urine due to large amounts of fluids ingested; diuresis due to drugs, alcohol, tea, coffee, etc.
(6,) Deficient Innervation	Emotional	Mental excitement—eager play. Fear of darkness or cold room. Wilfulness. Bad habits.
	Auto-suggestion	The child having wet the bed, and having been scolded or punished, the habit continues through fear. Dreams.
	Undue excitability of sphincter	Neurotic state. Masturbation. Sleeping on back.
	Enfeeblement of will	Anæmia, hysteria, neurasthenia. Lymphotism (adenoids).

References.—[1] "Brit. Med. Jour.," May 27, 1899; [2] "Treatment," vol. iii, No. 1, 1899; [3] "Arch. Ped.," vol. xvi, No. 11, 1899.

INFANT FEEDING. *Henry Dwight Chapin, M.D., New York.*

Mr. G. L. Eastes[1] contributes an arcticle upon the pathology of milk. Of one hundred and eighty-six milks examined, tubercle bacilli were present in eleven, and doubtful in two others. One was doubtful because only one bacillus, morphologically correct, was found, the other because of the right colour; the beading was not apparent in any except one, and in that only imperfectly. In forty-seven there was pus, and muco-pus was present in another seventy-seven. Both of these objectionable features were absent in fifty-one cases, and the question was undecided in the other eleven. Blood was noted in twenty-four samples, absent in seventy-seven, and probably absent in eighty-five. Streptococci were found in one hundred and six cases, absent in fifty-three, and undetermined in twenty-seven. Colostrum corpuscles were detected in sixteen specimens. The percentages in the mixed milks work out as follows: 5·3 per cent. contained tubercle bacilli, 30 per cent. contained pus, and 48·7 per cent. muco-pus, these varieties being therefore present in 78·7 per cent. of all mixed milks examined. It was absent in only 15 per cent., and doubtful in the other 6·3 per cent. Streptococci were found in 75·2 per cent. of the samples, absent in 15 per cent., and doubtful in the remaining 9·8 per cent. Milk containing pus or muco-pus and streptococci is unfit for human consumption. Milk derived from pasture-fed cows is less likely to be contaminated than that from cows which are stall-fed. The condition of mixed milk should be made more widely known and the conscience of the farmer aroused, so that he may of his own accord isolate those cows suffering from inflamed udders, and not permit their milk to be mixed with that of healthy cows.

Dr. H. E. Annett[2] reports a series of experiments upon animals showing the effects of **Boric Acid** and **Formalin** as milk preservatives.

From a consideration of the results of the tests—chemically of the effect of boric acid and formalin on the different digestive ferments, and physiologically of the effect of these re-agents on the nutrition of young kittens—one is forced to conclude that these chemicals when used as preservatives of milk (and probably of other foods) are very injurious to the health of the consumer and particularly so to the health of young infants. Further, it is easy to conceive that the great infant mortality-rate from diarrhœa of many of our large towns may be closely connected with the practice, especially during the summer months, of systematically "doctoring" milk by means of the preservatives used by milk-purveyors, dairymen, and milkmen. These experiments on young animals will constitute the first of a large

series by which "that sufficient information" as to the injurious effects of the use of preservatives in milk will be provided which may make an action under the Sale of Foods and Drugs Act possible.

Dr. Louis Starr[3] gives a clinical study of **Laboratory Milk** as a substitute in infant feeding. Laboratory milk being prescribed, it is possible for the physician to supply an artificial food identical in chemical composition with normal human milk, and at the same time to vary at will and accurately the percentage of fat, sugar, and proteids to meet the demands of each infant's digestive powers and developmental requirements. With all the above advantages, laboratory milk is theoretically the most perfect substitute for normal human milk that science has yet devised. But, unfortunately, clinical experience does not bear this theory out. In thirty-five cases the results of this feeding were very unsatisfactory, and in sixteen partially satisfactory. Three healthy infants did well upon the food. The trouble seems to be that in its composition all the fat is removed by a separator, and the food as prepared for the infant is a re-combination of this fat and an alkaline solution of the proteids and sugar. In a word, the natural emulsion is destroyed. This in some way lessens the digestibility of the proteids and leads to conditions either of malnutrition or to an irritative diarrhœa with the expulsion of the undigested proteids in the form of compact curds—and this, too, despite changes in the proportion of the proteids. On the other hand, the cream, milk, sugar of milk, and water mixture made carefully at home constitutes a modified milk, with a basis of unseparated milk—a natural emulsion, containing fat, proteids, sugar and salts. Under this physical condition the proteids are much more easily digested, so that a badly nourished child of ten months, in whom laboratory milk percentage cannot be forced higher than 1·50 proteids, will easily digest and grow strong upon a domestic mixture containing 2·97 proteids. The milk and cream from a dairy may vary slightly in chemical composition from day to day, but this variation is a minor detail, and of questionable importance when compared with the separator's destruction of the physical properties of the basal milk. Everything must not be sacrificed to chemical accuracy.

Dr. H. D. Chapin[4] reports a series of experiments in the laboratory, and upon a dog with a gastric fistula, proving that gruels are the most effective diluents of cow's milk.

The common objection to the use of gruels as diluents is that the young nursling should not be given starchy food in any form, as its digestive organs cannot cope with this food principle. While large quantities of starch should be withheld in infancy, even the youngest

baby can tolerate and digest a small and proper amount. It may be of interest in this connection to glance at one of the more recent analyses of the amount of starch in certain cereals, in comparison with older analyses. Reference is made to a report of the United States Department of Agriculture ("Bulletin," No. 34), upon the carbohydrates found in wheat and maize. These cereals are shown to contain a large variety of carbohydrates, among which the following have been quantitatively determined :—

	Per cent.
Sucrose	0·02 to 0·70
Invert sugar	None ,, 0·08
Dextrin	0·3 ,, 0·40
Starch	30·0 ,, 42·00
Pentosans and hemicelluloses	4·0 ,, 5·00
Fibre	2·0 ,, 2·50

According to the older analyses the cereal grains contain from 70 per cent. upward of carbohydrates, although the foundation for this rests not on specific analytical determination, as in the above analysis, but on estimates "by difference." Thus the newer analysis shows a discrepancy amounting to 20 per cent. or more of the entire material between the actual amounts of carbohydrates found in the materials studied and the amounts indicated in many of the recorded analyses in which the nitrogen-free extract determined "by difference" has been regarded as wholly of carbohydrate matter. This discrepancy introduces not only important errors into the estimation of the nutritive value of foods based on the earlier analyses, but on their digestibility as well. Any disadvantage in the employment of wheat or barley flour from the starch contained in these cereals in very young infants may be easily overcome by dextrinising the gruels.

Experiments made by the writer also show that dextrinised gruels are more efficient attenuants than plain gruels, the former producing a more spongy curd than can readily be acted on by the gastric juice.

Dr. E. H. Bartley [5] gives the following directions for preparing an infant's food from cow's milk :—

Siphon off from the bottom of a bottle of fresh milk of good quality three-fourths of its contents, leaving the cream and upper part of the milk undisturbed in the bottle. This may be easily done with a small glass siphon or rubber tubing, previously filled with water, to start the siphonage. Pinch one end of the rubber tube and hold it firmly, while the other is thrust through the cream and to the bottom of the bottle. Lower the outer end into the inner vessel of an ordinary *double boiler*, and release it, when the skim-milk will run out, provided

the latter vessel is kept lower than the milk in the bottle. To the milk thus drawn off add a teaspoon and a half of a good essence of pepsin, and warm slowly in the double boiler to blood heat, and keep at that temperature until thoroughly curdled. Now heat, with constant stirring, until a thermometer dipped into the milk shows a temperature of 155° F., and remove from the fire. Strain, while hot, through clean wire strainer and dissolve in the whey a heaping tablespoon of sugar of milk and the white of one egg. When cold, pour the sweetened whey back into the milk bottle and mix thoroughly with the cream and top milk. Pasteurise the mixture in a Freeman's Pasteuriser.

Dr. Muggia[6] treats cases of athrepsia by the hypodermic injection of a preparation of **Yolk of Egg.** Freshly-laid hen's eggs are taken and carefully washed before opening. The yolks are received into a sterile glass vessel, weighed and then mixed with a third of their weight of physiological salt solution. The mixture is then thoroughly stirred up with a glass rod and filtered through aseptic absorbent gauze. The liquid thus obtained is of a bright yellow colour and of a homogeneous consistency, and can be used for hypodermic injection. It is well to begin with an injection of about 1 c.cm., made into the buttocks or the lumbar region. The quantity of hypodermic injection is gradually increased till a limit of 10 c.cm. per injection is reached. The duration of treatment varies according to each case, but in any case not less than 100 c.cm. (20 injections of at least 5 c.cm. per dose) should be administered.

Dr. H. D. Chapin[7] reports upon his plan of preparing infant food at home, with reference to percentages and diluents. In selecting cow's milk for infant-feeding, that which is clean, aërated, cooled and bottled immediately after milking, and kept below 60° F., until delivered, is the article to be chosen by the physician. The richness of milk and cream depends upon the breed of cattle supplying the milk.

In most of the States that have dairy laws, the minimum amount of butter fat allowed is 3 per cent. In actual practice milk varying between 3 and 5 per cent. butter fat will be met.

There are times when infants cannot digest milk in any form. Egg mixtures are then advised, containing food principles as follows :—

Dextrinised Gruel and White of Egg.—Dextrinised wheat-flour gruel, 8 fluid-ounces ; white of one egg—581 grains (large egg).

Composition, about 2 per cent. proteids (egg 1·25, gruel ·75), 4 per cent. soluble carbohydrates.

By putting two even teaspoonfuls of granulated sugar into this mixture, 3 per cent. of sugar is added, which, with the 4 per cent. of digested starch, makes 7 per cent. total soluble carbohydrates.

White of egg contains 85 to 88 per cent. water ; ·07 per cent. salts ; 10 to 13 per cent. proteid bodies, made up of albumin, globulin and mucoid substance and traces of fats, lecithin and cholesterin.

Dextrinised Gruel and Yolk of Egg.—Dextrinised wheat-flour gruel, 8 fluid-ounces, yolk of one egg—288 grains (large egg).

Composition about, fat 1·7, proteids 1·7 (egg 1, gruel ·70), and 4 per cent. of soluble carbohydrates.

By putting two even teaspoonfuls of granulated sugar into this mixture, 3 per cent of sugar is added, which, with the 4 per cent. of digested starch, makes 7 per cent. total soluble carbohydrates.

Yolk of egg contains about 47·19 per cent. water and 52·81 per cent. solids, made up of 15·63 per cent. proteids, ·96 per cent. salts, 22·84 per cent. fat, 10·7 per cent. lecithin, and 1·75 per cent. cholesterin. Proteids of yolk contain phosphorus and iron, which are of great importance in the formation of blood, and a pseudonuclein which is also found in casein of milk. These are not present in the proteids of the white of egg. Lecithin, which also contains phosphorus, is undoubtedly "a very important material for building up of the complicated phosphorised nuclein substance of the cell and cell nucleins." Lecithin is also found in milk, especially woman's milk.

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INSANITY.

James Shaw, M.D.

General Paralysis of the Insane.—ETIOLOGY.—Müller's[1] cases are of great interest in this connection. A woman, aged forty-five years, had had syphilis and given birth to two children, one of whom, after showing evidence of congenital syphilis, died of infantile convulsions. The other child grew up in apparently good bodily and mental health until she was ten years old. She then began to exhibit loss of intelligence, soon became quite dull, stupid, and awkward, sank into a state of profound helpless dementia, and died. About the same time, the mother developed extreme conjugal jealousy, and became intemperate. Defective articulation with lingual and labial tremor appeared, and the mental condition rapidly lapsed into dementia, the patient dying shortly afterwards. The necropsy in both cases showed the typical vascular and meningeal lesions of general paralysis of the insane.

MacDonald and Davidson[2] report three cases of congenital general

paralysis—so-called idiots—admitted into the Dorset County Asylum. In these cases the lesions found post mortem were so characteristic that no doubt could be entertained as to their true nature. The family history showed that a strong neuropathic taint existed in all three. After a full and exhaustive inquiry, the authors of the paper were unable to trace intermarriage or syphilis on the part of the parents in any of the cases.

Toulouse and Marchand[3] report the case of a child who, after a short period of apparently normal growth and development, began to manifest signs of progressive dementia. There were epileptiform convulsions, inequality of the pupils, disturbances of articulation, and rapid emaciation followed by death. The necropsy revealed atrophy of the cerebral convolutions, adhesion of the pia-arachnoid membranes with tearing and decortication on attempts to strip them off, proliferation of the neurolgia cells, atrophy of the nerve-cells, and other changes characteristic of chronic diffuse meningo-encephalitis. The child's father had died of general paralysis with syphilis.

Mott[4] believes that while the syphilitic toxin is one of many factors in the production of the degenerative process, it is not absolutely essential. He says the statement, "No syphilis, no general paralysis" is not proved, but that everything tends to prove syphilis to be the most important factor by reason of its prevalence, its persistence, and its potency in producing devitalising effects upon structures which are incapable of repair. He thinks that another factor besides the toxic influence is necessary to produce this premature decay, and that probably the etiology of the disease is best summed up in the dictum of Krafft-Ebing, "Civilisation and syphilisation together are the main causes of general paralysis."

Mott's[5] researches on juvenile general paralysis, of which he examined thirty cases, showed him that the disease affected both sexes equally, commenced at any age from eight to twenty-three years, and presented in 80 per cent. of the cases either undoubted signs or history of congenital syphilis, which in the other 20 per cent. could not be excluded.

Sérieux and Farnarier[6] have made a long series of investigations concerning the etiology of general paralysis. They find that syphilis is certainly present in 50 per cent. of the cases, and the sole cause in 31 per cent. Where syphilis is a cause, but not the sole one, it is combined, as a factor, with alcohol or heredity, and, in a few instances, with traumatism. There is neuropathic heredity in two-thirds of the cases, but the writers consider this figure too low. Lead, alcohol, and possibly auto-intoxication may, in a small number of cases, give

rise to this peculiar form of meningo-encephalitis. The writers think, therefore, that the action of syphilis is not specific but merely a malign influence acting in conjunction with some hereditary fault.

For abstracts of reports of previous researches concerning the relationship of syphilis to general paralysis see "Medical Annual," 1898.

DIAGNOSIS.—Keraval and Laurent,[7] of the Armentières asylum, have found "cubital analgesia"—absence of the painful feeling with tingling along the course of the ulnar nerve and the slight muscular contraction in the little finger and hypothenar eminence, caused by pressing the nerve-trunk at the back of the elbow—in 52½ per cent. of their general paralytics. Cramer, in 1895, had noted it in 75 per cent. Of the other patients of Keraval and Laurent the ratios of those exhibiting the sign were: dements, 87 per cent.; idiots, 85 per cent.; degenerates, 40 per cent.; melancholiacs, 32 per cent.; chronic delusional cases, 30 per cent.; maniacs, 19 per cent.; alcoholics, 10 per cent.; while epileptics—twenty were examined—showed normal feeling in all cases. The writers think that this symptom, previously observed by Biernacki in locomotor ataxy, takes rank next only to the already well-known physical signs of general paralysis of the insane.

PROGNOSIS.—J. Adam,[8] attempting to ascertain the accuracy of the old-standing estimate of the duration of general paralysis, viz., two years, obtained statistics from twenty-six county and sixteen private asylums, and other institutions. The average duration in the county asylums was one year and ten months, in the private asylums, two and a half years. The average age at death in the county asylums was forty-two and a half, in the private, forty-six years. The writer appends notes of three typical cases, two of which recovered.

Acute Mania.—TREATMENT.—Hitchcock[9] gives notes of two hundred and six consecutive cases of acute mania treated at the York Lunatic Hospital during his sixteen years of office. One hundred and seventy-one of these cases recovered, eight died during and because of the attack, three died from intercurrent bodily diseases, twelve were discharged relieved, seven were transferred to other asylums, and five remained under care at the time of writing. He thinks his large recovery rate is due to his having discarded sedatives in the treatment of these cases. The history of the case, with careful physical examination, temperature taking, and urine testing, will sometimes give a clue to treatment. A purgative, particularly **Calomel,** may work wonders. Milk and eggs with farinaceous food in abundance will suit another case. If feeding is intended it should be done early and often.

Where there is a tendency to exhaustion, as in puerperal mania, patients ars most readily influenced by **Suggestion.** Occasionally, the writer resorts to the **Wet Pack** or **Hot Bath** with or without cold affusion to the head, and sometimes uses a bath of 110° to 115° for ten minutes, the patient being afterwards wrapped in blankets. Hot whisky and water or a glass of stout are also amongst simple remedies that may be very helpful.

Neil McLeod,[10] encouraged by his success in the treatment of various drug habits (see last year's "Medical Annual"), has applied his treatment—the induction of what he terms "the bromide sleep"—to cases of acute mania. He says the best method of giving the **Sodium Bromide** is probably yet to be worked out, but that so far he is inclined to give it only in the daytime, 2 drachms in half a tumblerful of water every two hours until an ounce has been given, the first day. On the second day, a similar amount is given in the same way, and this may suffice to produce the desired effect. A safe rule, he says, is to omit the bromide for twenty-four hours when drowsiness is so profound that the patient cannot be roused or talks incoherently when roused. If the sleep continues no more bromide is needed. Cold should be guarded against, and a tumblerful of milk given every two hours until seven have been taken each day. This treatment enabled McLeod to have a patient removed from the interior of Japan to Shanghai without mechanical restraint. Another patient, having taken the bromide only two days, recovered in twenty-three days. In a third case, one of acute delirious mania, sleep was induced, food was taken, but the patient, who wore artificial teeth, died of septic inflammation of the mouth and parotid on the sixth day of treatment. The bromide was given, by the nose through a catheter, three days in this case. The patient could not be roused on the fourth, fifth, and sixth days.

See "General Therapeutics" (baths, etc.) p. 328.

Acute Delirium.—TREATMENT.—Marro[11] has treated twelve cases by **Washing out the Stomach.** Only five of these, however, presented the features of what he regards as acute delirium—properly so called, viz., rapid onset of the disease, elevation of temperature, profound mental confusion with terrifying hallucinations, and general muscular twitchings. In all of these five cases the treatment was followed by rapid improvement in the mental condition, while of the remaining patients four recovered and three died.

Operations and Insanity.—Since the literature on *post-operative insanity* was epitomised in last year's "Medical Annual," some further contributions to the subject have been made, notably one by Sir W.

M. Banks,[12] who mentions ten cases which have occurred in his experience. Eight of these were after removal of the breast, one, also in a female, followed excision of an epitheliomatous ulcer of the rectum, and the tenth, in a man, supervened on removal of a large sarcoma from just below the axilla. Six of the breast cases were maniacal, two melancholic. The other two were cases of mania. The symptoms set in within a few days or a week after operation, and though septic infection was present in some cases, the patients did not lie muttering and moving uneasily as in the delirium of septicæmia, but were violent, and struggled to get out of bed. The symptoms were not transient as are the toxic effects of iodoform and phenol.

Picqué and Febre[13] report a series of successful cases of gynæcological operations in the insane. The operations were followed by recovery or great mental improvement. Only diseased organs were removed. Care was taken to exclude hysterical patients, as they would probably have been rendered worse by operation.

Anæsthetics and Insanity.—Savage[14] says anæsthetics alone may produce insanity, or the production may be the effect of the operation and anæsthetic combined. There is great danger to patients who have had previous attacks or who are very unstable. The administration of an anæsthetic to a convalescing patient will sometimes cause relapse. The risk of insanity supervening seems to be greatest in operations about the bladder and rectum. Stupor or mania is the form usually developed. Anæsthetics procure temporary quietude in actual insanity, but their use, although harmless, is never followed by permanent benefit.

General Therapeutics.—During recent years, J. Adam[15] has seen some good results in ordinary forms of insanity from **Open-Air Treatment** conducted somewhat on the Nordrach system, modified to suit individual cases according to the mental condition. The patient rises at 8, receives a cold douche, has a substantial breakfast, goes for a walk at a prescribed pace, rests for an hour in his room with open window spaces, has a copious lunch or dinner, takes another walk at a snail's pace, rests another hour, has a supper at 7 p.m. nearly as substantial as the dinner, takes another walk, and at 10 goes to bed.

Thompsen[16] recommends **Baths** of 59° to 77° F., lasting six to eight minutes, the head and face being cooled before the bath. He uses the wet pack in all cases of irritability and excitement, especially in maniacal states. Kræpelin treats mania with warm baths which last hours, even days. If there be congestion at the same time he

applies cold to the head. After the bath he uses cold affusions or rubbing. For apathetic and stuporous patients Thompsen uses warm baths followed by cold affusions. Mania, melancholia, and acute delusional paranoia are likely to be benefited by balneotherapy.

Beyer [17] considers that the routine use of the **Prolonged Bath** will prove one of the most important advances in the treatment of the insane. The temperature of the water is maintained at 95° F. The patient divides his life between the bath and the bed ; in the morning he goes into the bath, in the evening into the bed ; and so on for days and weeks together, the meals being given while he is in the bath. Frequent examination and numerous precautions are unnecessary, even contra-indicated, as the method is quite safe, requiring only the constant supervision of an attendant. All cases with bedsores are suitable, and cases of excitement, particularly those which are dirty or in which the patient having bedsores cannot be otherwise treated for them. The patient is more easily kept in the bath than would be expected, but a dose of hyoscine is sometimes required to start the baths. The prolonged bath has proved most successful in the excitement of acute mania, less so in that of dementia præcox (hebephrenia, precocious dementia). The excitement of paralytics has been little amenable, but that of alcoholics and epileptics has been successfully treated.

Greenwood [18] has obtained marked and often surprising success from the use of repeated **Lavage** in cases of refusal of food arising from acute gastric catarrh. The success of this washing out of the stomach is shown by return of appetite, by the patient taking food without being forced, or by improved digestion evidenced by gain in weight where the food is still refused.

Newth [19] describes an easy method of **Forcible Feeding** which, although not generally known, has been in use in Hayward's Heath Asylum for over thirty years. The patient being placed in the recumbent or semi-recumbent posture, the person who administers the food steadies the head with his left arm or between his knees. A sheet is wrapped round the patient's legs, and a nurse, kneeling on it holds the hands, avoiding pressure. The person who gives the food, then introducing the forefinger of his left hand, stretches the cheek to its fullest extent, hindering the action of the orbicularis oris and buccinator, and so preventing the patient spitting out the fluid. About an ounce at a time is poured into the pouch thus formed, and trickles down the throat. The teeth need not be opened, for if they are all present, which they rarely are, there is plenty of room behind the last molar, or even between the teeth for the liquid to reach the

pharynx. If the patient refuses to swallow, it is recommended that the nose should be gently pinched so as to necessitate breathing through the mouth. Newth has frequently used this method on the insane in general practice, and on young children with the most satisfactory results.

Bechterew,[20] Krafft-Ebing, and others employ **Suggestion** aided by baths, bromides, etc., in the treatment of sexual inversion and masturbation.

For the prevention of masturbation, Campbell Clark and H. E. Clark[21] have performed **Neurectomy** with success in the case of a middle-aged man three years insane. About half an inch of each of the nerves of the dorsum of the penis was resected, by means of a transverse incision about half an inch from the root of the organ. The patient discontinued the habit, and had, at the time of writing, been for over a year very much improved mentally.

Bromipin is highly recommended by some writers as a substitute for the bromides. (See "Epilepsy" and "Neurasthenia.")

Peronin, mentioned in the "Medical Annual," 1898, as being useful for phthisical cough, has been tried by Melzer[22] in the insomnia of paralytics. Forty-five administrations to five patients gave a successful result in 70 per cent. of the trials. The same five patients, treated with paraldehyde, amylene hydrate, chloral hydrate, sulphonal, and trional, gave 64 per cent. of successes. Sleep began with peronin in a quarter of an hour to an hour, and lasted from two to eight hours. It is costly, but the dose is only from $\frac{2}{3}$ of a grain to 1$\frac{1}{2}$ grains. It is not soluble enough for hypodermic use; Melzer, therefore, recommends it to be given dissolved in spirit and abundance of water, and sweetened with saccharin.

Bodoni[23] reports fourteen cases, examples of mania, periodical melancholia, paranoia, and hystero-epilepsy, in which **Methylene Blue** was tried. The drug was injected into the gluteal muscles in doses of 1 grain to 1$\frac{1}{2}$ grains. Its *sedative* action became manifest within from three to six hours, and usually persisted for a day, sometimes for three or four days. The quieting action was neither attended by any narcotic effect nor followed by any unpleasant symptoms. Vallon and Wahl[24] confirm previous reports as to the *hypnotic* powers of this drug, but do not find that it offers any striking advantages in that respect. They gave it by the mouth in capsules containing nearly 4 grains ($\frac{1}{4}$ gramme), repeated twice, in the evening. The blue staining of the urine is a great drawback when the patient is "wet."

Bresler,[25] writing of **Dionine,** one of Merek's new morphine

derivatives, quotes Hoff, Fromme, Heinrich, and others as speaking highly of its effects in the treatment of nervous insomnia and morphinism, and in relieving pain. It is freely soluble and, therefore, acts rapidly, and is soon eliminated. It is said to be of especial importance in morphinism, when cocaine, opium, bromine, etc., have failed, and it appears to have a decided advantage over codeine. The ordinary dose by the mouth is from $\frac{1}{3}$ to $\frac{1}{2}$ grain three times a day. The hypodermic dose is somewhat smaller, except in morphinism, in which it depends on the quantity of morphine to be replaced.

Schüler[26] has published twenty-one cases in which **Hedonal** was used in Krafft-Ebing's clinic. The dose is 15 to 30 grains given, either in dilute spirit or in cachets, an hour and a half after the evening meal. In successful cases sleep followed in from a quarter of an hour to an hour and a half. Of the twenty-one patients it was only successful in nine, acted doubtfully in seven, and failed in five. Schüler concludes that it is not to be regarded as a universal hypnotic, but that it is very valuable in mild insomnia where the irritability of the brain hinders the onset of sleep. Hedonal is free from the special disadvantages of chloral and paraldehyde, and can be usefully given alternately with trional, even for a prolonged period.

Peters[27] has tried **Dormiol,** a combination of chloral with amylene hydrate, in forty-five cases of various kinds at the Luisenhospital, Aix-la-Chapelle, with very favourable results. It was given either in the form of a 10 per cent. watery solution or in capsules containing $7\frac{1}{2}$ minims. Doses of $\frac{1}{2}$ gramme were usually given to begin with, and increased, if necessary, to 1 gramme, occasionally to 2 grammes. In 84 per cent. of the cases, sleep was induced, appearing, on the average, in from half an hour to an hour. Dormiol was especially serviceable in sleeplessness due to functional neuroses. Schultze,[28] of Andernach, writing of the effects of dormiol on sixty patients at the asylum there, states that it was successful in 75 per cent. of the cases. It acted best in cases of hypochondriasis, melancholia, and simple depression. In the excitement of mania, general paralysis, and epilepsy it mostly failed. The dose was generally about 20 minims, but in some few cases 45; if the latter dose failed the drug was not indicated. If refused by the mouth it was administered by the rectum mixed with 2 or 3 drachms of mucilage of gum acacia. The drug was never given on two consecutive nights. Unpleasant after-effects were practically absent, and it was not observed that there was either habituation to the drug or delay in the appearance of the effect.

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INSOMNIA.

Synopsis.—(Vol. 1900, pp. 284 and 286). Application of **Wet Flannel Roller Bandages** in insomnia of neurasthenia, also the **Hydropathic Drip Sheet.** **Paraldehyde** is best hypnotic; **Chloralamide** and **Chloralose** are safe but slow. **Sulphonal** is the most valuable of the sulphones (Sulphonal, Trional and Tetranal). A capsule containing 30 min. **Turpentine** at bedtime is useful for insomnia of over-work, and is best in plethora. For hysterical women a mixture of **Bromide, Tincture** of **Sumbul,** and **Tincture of Hops** in **Camphor Water.**

INTESTINE (Gangrene of). *Walter G. Spencer, M.S., M.B., F.R.C.S.*

Extensive resection of the small intestine has been successfully carried out. Barker [1] reports two cases—one, a woman, aged forty-six, in whom a femoral hernia had been strangulated for three days; the other, a man, aged twenty, with an inguino-scrotal hernia strangulated for five days. He first applied Doyen's clamps, and after removal of the gangrene, made an end to end union with a double row of silk sutures. The chief points emphasised are: preliminary washing out of the stomach, keeping the patient warm, a continuous hypodermic infusion of saline fluid throughout the operation, and afterwards an hypodermic infusion of a pint twice a day, with nutritive and hot water enemata, and early but cautious feeding by the mouth. Immediate closure or drainage of the abdomen must be selected according to the case.

Dreesman [2] was also successful in the case of a woman who had extensive gangrene of a volvulus in a femoral hernia. Twenty hours after the onset of the strangulation he resected seven feet of the ileum, closed the distal end, and implanted the proximal end into the ascending colon. The patient was alive six months later, having lost 1¾ lb. in weight. Of twenty-six cases from whom a metre or more of intestine had been removed, nine died immediately and sixteen completely recovered.

Schlatter [3] resected about 6 feet of the small intestines from a powerful, well-developed Italian, aged twenty-three, who, nine hours

before had been stabbed in the hypogastrium, causing the intestines to prolapse. The patient recovered and did well on the hospital diet. Eight months later, however, his condition was not satisfactory. He could do a little field work, but worked slowly and with frequent intervals of rest. He lived on fluids but could not tolerate solids such as bread, polenta, cheese, and had lost 3 kilos. in weight since his discharge.

Monprofit[4] removed 7½ feet of the ileum and colon which were adherent to the sac in an irreducible hernia.

REFERENCES.—[1] "Brit. Med. Jour.," 1900, ii., Dec. 23; [2] Ibid., 1899, ii., Sept. 8; [3] "Lancet," 1900, i., 217; [4] "Brit. Med. Jour.," 1900, i., Epit. 18.

INTESTINE (Surgery of). *Walter G. Spencer, M.S., M.B., F.R.C.S.*

Intussusception.—Collier[1] reports three successful cases in children. An early operation, a small right iliac incision, and the reduction of the gut aided by inflation of the colon from below were the main features. Stiles[2] recommends that the incision should be made above the umbilicus as less liable to subsequent yielding. D'Arcy Power,[3] who has given some very valuable lectures on the subject, refers to the danger of recurrence owing to paralysis which must be met either by fixing the gut to the abdominal wall in a suitable position or by resection. Betham Robinson[4] operated late in a case, he could only partly reduce the tumour, so was obliged to resect, when he found that the intussusception had commenced in a Meckel's diverticulum which prevented reduction. Unfortunately the patient did not live.

Intussusception from Multiple Polypi of the Small Intestines.—Multiple polypi usually occur in the rectum and lower colon of young male adults. A chronic bloody mucous discharge is kept up, and finally the disease becomes malignant. Karajan[5] operated upon a young man, aged twenty-three, who had suffered from recurrent attacks of colic for eighteen months. An intussusception of the ileum was found with a polypus at the apex, also a number of other polypi existed up as far as the duodenum. Altogether ten polypi were removed through three incisions, one in the ileum and two in the upper jejunum; besides there were a number of small polypi the size of peas left untouched. The patient made a good recovery.

Perforation in Typhoid Fever.—Successful cases continue to be reported in what was previously a hopeless complication. Platt[6] lays stress upon the necessity for a rapid operation through a right lateral incision, the flushing or wiping away of the extravasation, suturing or even excision of the ulcer and subsequent drainage.

Armstrong[7] had operated ten times for typhoid perforation with one

success. It is necessary to operate as soon after the perforation as possible. The sutured perforation in the intestines tends to firmly close, but not so the abdominal wall, owing to the patient's lack of repair. In one man, who lived forty-five days, no union occurred, and when the stitches were removed the edges of the incision fell apart. Cushing's experience [8] serves to show that no great harm ensues from an exploratory operation, even although no perforation in correspondence with the symptoms be found.

Tuberculous Peritonitis.—Tillmann [9] refers to three hundred and fifty-eight cases. Among one hundred and thirty-one of these, one hundred and seven were restored to good health ; thirty-four continued well three years after the abdominal incision, with removal of the effusion and drainage. Gallant [10] says that many cases occur in women between the ages of twenty and forty, in whom it often originates from the internal genital organs, when it is necessary to remove in addition the primary diseased focus.

Intestinal Anastomosis and Exclusion.—Whilst gastro-jejunostomy is the typical anastomosis because the one most frequently applied, numerous occasions require the employment of the method lower down.

Le Dentu [11] summarises an operation practised by von Eiselsberg on the suggestion of Salzer, of Utrecht, in 1891, as an alternative to making an artificial anus. It is especially applicable to irremovable cancer to prevent obstruction and to fistulous conditions, such as gastro-colic fistula, to stop the fæcal vomiting. The intestines are divided above and below the disease, and the proximal connected with the distal end. The two ends of the diseased piece of gut should be fixed to the skin, and then the diseased loop can be washed through. It has been proposed to close the diseased loop by infolding each end or by joining them to make a ring. But there is the obvious danger that the discharges from the cancer will accumulate in the loop thus shut off, and ultimately rupture with extravasation of its decomposing contents.

Chronic colitis and idiopathic dilatation of the colon have been treated by colotomy and continuous irrigation, also by excision. Treves [12] concludes that the idiopathic dilatation is of congenital origin, and is relieved by excision. Fitz [13] notes this condition as being one of the causes of phantom tumour which was successfully treated by Porter, following Treves. But there are also cases which occur late in life, in whom no obstruction is to be found, nor does chronic constipation afford a complete explanation. There appears here to be some local failure of innervation. Sinigar [14] has recorded two cases. Colotomy does not appear to be suitable. Lindner [15]

treated a case of chronic colitis successfully by making an anastomosis between the ileum and the sigmoid flexure, and this seems the most serviceable operation for such cases.

Cancer of the Colon.—The adeno-carcinoma of the large intestine is a favourable form for resection, as the glands are only infected late. But it is difficult or impossible to detect such a growth whilst under one or two inches in diameter in certain situations, such as at the junction of the sigmoid and rectum or about the hepatic or splenic flexure. In such cases the surgeon has generally to operate in an advanced stage of acute intestinal obstruction, and death usually follows from exhaustion and intestinal paralysis. Such cases could only be satisfactorily dealt with by exploring early as soon as a chronic intestinal obstruction is diagnosed and before it becomes acute. In other positions a tumour may be felt at an early stage before it has reached the size of a hen's egg, in the cæcum and first part of the ascending colon, in the middle of the transverse colon, at the end of the descending colon, and upper part of the sigmoid flexure.

Interesting cases have recently been recorded by Battle,[16] Paul,[17] McAdam Eccles,[18] and Johnson.[19]

One case of Battle's was a man aged thirty-four, who had had "wind in the stomach" for fifteen months, and a lump for two months. A cancer of the cæcum and ascending colon could be felt, 3½ inches in length and 1½ inch broad; this was excised and the ileum with success immediately implanted into the ascending colon. A second case, a woman, aged forty-eight, had obstruction following on constipation for a fortnight. A cancer of the sigmoid was found, which was excised, and Paul's tubes tied in. About six months later a lateral anastomosis was made and the artificial anus closed. Six months later still, *i.e.*, about a year after the removal, there were clear signs of a secondary growth in the liver. In a third case of a woman, aged twenty-nine, there had been subacute intestinal obstruction for three weeks, which was found to be due to a growth in the splenic flexure of the colon. A Paul's tube was tied in above, and about a month later, when the condition of the patient was much better, the mass was excised and the ends directly united with sutures. The growth occupied 4½ inches, and the case made a good recovery. In a fourth case, a man, aged forty-four, had chronic and subacute obstruction for thirteen weeks, and this was found to be due to a malignant growth forming an intussusception in the upper part of the rectum. On abdominal incision the gut was found so tense up to the hepatic flexure that Paul's tube was tied into the cæcum. About six

weeks later the growth with the intussusception was excised from the rectum and the cæcal opening ultimately reduced to a small fistula, so that in about six weeks he was able to get about with a pad over the opening. Appended to the article is a table of other cases.

Paul had operated upon nine cases, and gives a diagram showing the tubes *in situ*; there they remain up to seven or ten days. Later he destroys the spur by means of Dupuytren's enterotome, and then dissects up and turns in the mucous membrane, finally drawing the skin over. McAdam Eccles refers to two cases of cancer of the ascending colon. In that of a man, aged forty-three, chronic obstruction was followed by acute; the growth was removed with diseased glands, and an artificial anus established, but the patient died exhausted in six hours. In a second case, of a woman, aged forty-three, there was chronic obstruction. The ascending colon was drawn out of the wound and fixed, no artificial anus was made as fæces passed easily through the growth. Eight days after the growth was removed and the ends united. These gradually withdrew into the abdomen and the skin closed over by second intention, leaving a ventral hernia, except for which the patient six months later was well, and had gained a stone in weight. Johnson removed a cancer of the ileum and cæcum the size of a cocoa-nut from a woman, aged sixty-five, with a few enlarged glands; the ileum was implanted into the ascending colon, and the patient was reported well two months after the operation.

Bland Sutton[20] records a rare case of fatty tumour of the ascending colon. A man, aged forty-four, had had indefinite intestinal disturbance for seven years. For three months he was threatened with attacks of intestinal obstruction, then a fairly definite mobile lump was noted in the region of the cæcum. On exposing the colon a lump was felt in it about two inches from the ileo-cæcal valve. On opening the lumen of the colon an ovoid tumour was exposed covered by normal mucous membrane. It was easily enucleated from the submucous tissue, the mucous membrane again united, and the wound in the colon closed. The tumour, weighing 2 ounces, probably arose in the subserous tissue, and later projected into the lumen. It is one of the forms of polypus of the intestine, and may produce intussusception, as in Stabb's case.

REFERENCES.—[1] "Lancet," 1889, ii., Aug. 26; [2] Ibid., 1899, ii., 1672; [3] "Brit. Med. Jour.," 1899, i., 19; [4] Ibid, 1899, ii., Nov. 18; [5] "Treatment," 1899, Sept. 28; [6] "Lancet," 1899, i., 505; [7] "Brit. Med. Jour.," 1899, ii., Epit. 58; [8] Ibid., 1899, Feb. 4; [9] "Treatment," 1899, Sept. 14; [10] "Amer. Jour. of Obst.," 1899, Oct.; [11] "Brit. Med. Jour.," 1899, ii.,

Nov. 11 ; [12] "Lancet," 1898, i, 276 ; [13] "Amer. Jour. Med. Sci.," 1899, August ; [14] "Lancet," 1899, i, 690 ; [15] "Cent. f. Chir.," 1899, p 654 ; [16] "Lancet," 1897, ii, 1277 ; "Brit. Med. Jour.," 1899, i, 907 ; [17] Ibid., 1900, i, Feb. 3 ; [18] Ibid., 1900, i, Jan. 13 ; [19] Ibid., 1900, i, March 27 ; [20] "Lancet," 1900, i, 1437.

IRIS. *F. Richardson Cross, M.B., F.R.C.S.*

In the "Medical Annual" for 1900 (p. 289) reference was made to some experiments by Nüel which tended to show that the aqueous is directly absorbed by the anterior surface of the iris. Further experiments by Benoit and Nüel [1] confirm these observations. Chinese ink was injected into the vitreous of two human eyes, one in a child aged four, the other in a man aged fifty-six : it quickly made its way into the anterior chamber, colouring the aqueous black. A few hours later the contents of the orbits were removed for sarcoma of that region not implicating the eyeballs. Sections of the eyes were made and treated with chlorine water, which, while not affecting the ink, decolorises the brown pigment of iris, etc. These showed that the ink had penetrated into the iris through crypts in the anterior surface, and had formed a thick layer near its posterior surface. These crypts lie near the pupillary margin and at the root of the iris. There were no signs of the posterior surface of iris being penetrated. The particles of ink impregnated the vessels in the ciliary body ; but were not found in the retina, optic nerve, or choroid. They were also found in the cavernous tissue at the sclero-corneal angle, and surrounded but did not enter the canal of Schlemm. The authors conclude that the iris is the part principally concerned in the elimination of the aqueous. Venneman, however, contests this view ; he says that fluorescein, which is perfectly dialysable, takes much longer than the ink to traverse the same route, and he will not admit the existence of lymphatic spaces in the iris.

Westphal [2] has called attention to two pupil phenomena which are stated not to have been previously described :—

(1,) If anyone with normal eyes tries to close them firmly while the lids are at the same time held forcibly open, his pupils will be seen to contract. This contraction of the sphincter iridis in association with contraction of the orbicularis is wanting in eyes in which the reaction of the pupil to light is impaired, and its absence constitutes one of Westphal's new phenomena, and has been observed by him in cases of locomotor ataxia, cerebral syphilis and paralysis.

(2,) If a patient with rigid or slowly moving pupils closes his eyelids firmly and then opens them without any visual effort his eyeballs will rotate upwards and outwards or more rarely downwards and inwards,

and at the same time his pupil will distinctly contract. Westphal considers this phenomenon to be due to a co-ordinate action of the facial and oculo-motor nerves.

The existence of a definite pupillary contraction depending upon a purely cortical stimulus has been verified by several observers. Among others Haab found that fixing the attention on a light object situated in the periphery of the field of vision without in any way altering the fixation point, caused a contraction of the pupil. Interest in this subject has been renewed by some recent experiments of Piltz.[3] He not only corroborated the observations previously described, but also proved that a dilatation of the pupil occurred when the attention was directed to a dark object. An intelligent man was selected for these experiments. The room was lighted with gas, and a spot on the opposite side of the wall was chosen for the fixation point: a black hat was placed in the right field of vision, whilst a light object was placed in the left field. The subject was now told to think of the black hat without in any way altering his fixation point, and a dilatation of the pupil immediately took place; conversely when his attention was directed to the light object a contraction of the pupil occurred. When the light and dark objects were entirely removed a similar contraction and dilatation of the subject's pupil occurred when he thought of them. Piltz made the further interesting observation that sometimes the pupil showed signs of "hesitation" in its movements, *i.e.*, a series of minor contractions occurred following each other very closely. This "hesitation" of the pupil was found to correspond with the subject's periods of indecision as his attention wavered between dark and light objects.

REFERENCES.—[1] "Soc. Belg. d'Ophtal.," April, 1899, Trans. Ninth Internat. Congress of Ophth., p. 75; [2] "Neurolog. Centralbl.," Feb. 15, 1899, and quoted in "Med. Press and Circ.," Mar. 1, 1899; [3] "Neurolog. Centralbl.," Jan. 1, 1899.

KIDNEY (Surgical Diseases of). *E. Hurry Fenwick, F.R.C.S.*

Glycerin in the treatment of Renal Calculi.—Hermann [1] (Carlsbad) gives a further report on eighty-five additional cases of calculus treated by large doses of glycerin. In fourteen, calculi were passed with relief from symptoms; in seventeen, no relief followed the passage of stones; in twenty-one, the pains disappeared without discharge of the calculus; and in thirty-three cases no result whatever was attained. The mode of action of the glycerin was to facilitate the discharge of the stones by making the mucous membrane more slippery (*sic*).

No dissolving action is claimed for the drug. Hermann recom-

mends the use of absolutely pure glycerin in doses of 4½ ounces, which may be combined with syrup of orange.

Renal Hæmaturia ("*Essential*").— Floderus,[2] from a study of the published cases of "essential hæmaturia," divides them into five groups: (1,) Renal hæmaturia in cases of hæmophilia; (2,) Renal hæmaturia from vaso-motor disturbances; (3,) Renal hæmaturia from mechanical causes; (4,) Cases of essential hæmaturia incompletely reported.

The reports on cases are unfortunately very imperfect; in no single case was the kidney proved by microscopic examination to be absolutely healthy. In a kidney removed for hæmaturia, which presented no pathological appearances to the naked eye, Floderus found on microscopic examination that there was diffuse granular and interstitial nephritis, with some fatty degeneration of the epithelium.

Pousson [3] examined two kidneys removed for profuse hæmorrhage, and found inflammatory patches in the cortex. Poirier and Piqué, in discussing this case, disapproved most strongly of nephrectomy in such conditions. Bilateral disease is most probable, and both observers have had the unfortunate experience of patients dying with uræmic symptoms a short time after nephrectomy in similar cases. No evidence of tuberculosis was found in these cases, although Regnier found early tubercular disease present in three kidneys removed for similar conditions.

Hurry Fenwick [4] has studied cases of persistent, painless, unilateral renal hæmaturia in young adults. They form a class apart, and are not to be confused with the painless renal hæmaturia of the early stages of malignant kidney met with in middle and later life.

Pus was only found in the urine of the cases where the bladder had been washed out. In some, granular casts were found in the urine, and these cases seemed more amenable to drug treatment. In other cases in which renal elements were wanting, the hæmaturia was occasionally so profuse as to necessitate exploration of the kidney. The author has been in the habit of examining these cases by incising the convex border of the kidney and introducing the finger into the pelvis, and this has generally been followed by cure, but no information was gained as to the cause of the hæmaturia, and the examination was made at the expense of the destruction of a certain amount of renal tissue. In his two latest cases, the pelvis itself was opened and examined by means of a strong light (renal pelvoscopy), and in each an engorged and varicosed condition of the vessels, covering a Malpighian pyramid, was discovered, due probably to a patch of interstitial nephritis impeding the circulation in the boundary layer of

the pyramid, and thus preventing venous drainage of the papillary plexus. The papilla was scooped away with a Volkmann's spoon, and in both cases an abrupt cessation of the previously uncontrollable hæmaturia resulted.

The accompanying illustrations (*Plate VIII, Figs.* 1, 2) show the section needed to expose and remove the diseased papilla. On microscopic examination the excised papillæ showed congestion of the vessels with extravasation of blood, and in one an increase in the cellular stroma. An interesting point in one of the cases was that the hæmorrhage was apparently under nervous control, for several attempts with the cystoscope to discover the side from which the hæmorrhage was taking place were baffled by the temporary cessation of the hæmaturia, and it was only when an unexpected examination was made that the ureter was seen discharging bloody urine.

The author considers that these cases point to the importance of examining the renal pelvis by the aid of a strong light; to the extremely small source of an uncontrollable hæmorrhage; to the precision and ease with which such a source can be removed, and to the needlessness of mutilating the cortex for this purpose; and, finally, he submits the subject as a probable clue to a cause for some of those painless unilateral hæmaturias which have so long puzzled and baffled the physician by their obscurity, persistency and danger.

Surgical treatment of Nephritis.—Attempts have of late been made to extend the surgical diseases of the kidneys by the inclusion of certain forms of nephritis hitherto deemed medical. Nephrotomy has been introduced for the relief of intrarenal tension, while nephrectomy even is suggested in these cases for the suppression of the reno-renal reflex, analogy being drawn from the enucleation of one eye in sympathetic ophthalmia. That puncture of the kidney capsule and nephrotomy has been followed by abatement of symptoms, the cases brought forward by Pousson,[5] Fergusson,[6] Fenwick,[7] and others, apparently leave no doubt, and the value of such measures in selected cases may come to be recognised by physicians, but in these days of conservative renal surgery, when the operator will, when he dare, preserve a part of a gland affected with such progressively fatal diseases as tuberculosis and malignant tumours, the likelihood of surgeons sacrificing one whole kidney for a doubtful reno-renal reflex is, to say the least of it, remote even in the presence of such a startling analogy as that of sympathetic ophthalmia, the modern pathology of which, for the nonce, is here overlooked.

Pousson's most striking case is one of nephritis with profuse

PLATE VIII.

RENAL PAPILLECTOMY.

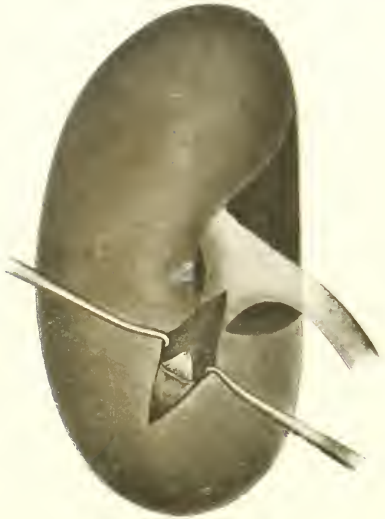

Fig. 1.—Angioma of a papilla in Miss B. ; papilla scooped ou ; abrupt cessation of profuse hæmorrhage.

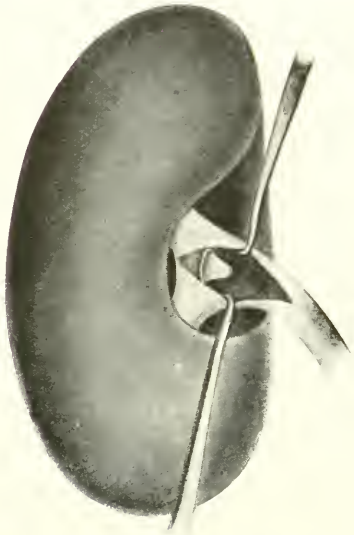

Fig. 2.—Angioma of papilla in Miss L. ; papilla scooped out ; abrupt cessation of a five years' hæmaturia.

hæmaturia, severe uræmic symptoms, scanty, albuminous urine with little urea. After nephrotomy the flow of urine was re-established, the albumin diminished, the urea increased in amount, and the uræmic symptoms disappeared. When the fistula closed there was a return of the symptoms, although of less severity.

Some Points in the Diagnosis of Movable and Displaced Kidney.—Jaundice of an intermittent type is well recognised as an occasional complication of movable kidney, and its sudden onset, and equally sudden disappearance, together with its recurrence after a short period of freedom, have been accepted as forming a somewhat characteristic clinical picture. The coincidence of gall-stones has explained some of the cases, while in others the condition has been considered as resulting from pressure of the wandering kidney itself upon the ductus choledocus, a condition which was first demonstrated, I believe, by Litten. Another view, for which Weisker is responsible, is that traction upon the peritoneal folds, and especially on that known as the hepato-duodenal ligament, is the cause of the obstruction.

It is seldom that a series of cases such as that recorded by Maclagan and Treves,[8] so well illustrate one point in diagnosis. In each of the three cases, all of whom were women, there was a long history (three to six years) of occasional pain in the epigastric and hepatic regions, and from time to time, attacks of very severe pain. Recurrent attacks of jaundice were an important feature, and in two of the cases the temperature was raised (99·8 and 101° F.). There was tenderness at the epigastrium and in the region of the gall bladder, and in one case the gall bladder was felt full and distended during the attacks. The right kidney was felt "very movable" in two and "movable" in one of the cases. In one, there was a nurse's report of the finding of a gall-stone in the stool. In all three cases the diagnosis was that of gall-stones, and operation was undertaken for their removal. No gall-stones were found at any of the operations, but in two of them Mr. Treves found the kidney actually pressing upon the common bile duct. After fixation of the wandering kidney, the symptoms disappeared in all the cases.

In these cases there was no doubt as to the enlarged gall-bladder and the movable kidney: the patients were all thin, and palpation probably presented little or no difficulty. It sometimes happens, however, that with symptoms which may point to either condition, there is much difficulty in determining the nature of a swelling presenting below the ribs. Deaver[9] thinks the following are important points of difference.

The position of the enlarged gall bladder, the mobility of its lower

as compared with its upper end, and the more rounded and less resistant lower pole, while the absence of jaundice and a cholelithiatic history are also important in diagnosis.

A sense of fluctuation can sometimes be detected in enlargement of the gall bladder. In some cases the lower end of the gall bladder tumour may be carried into the loin space, and if fixed there by adhesions, will lead to difficulty.

Another case of difficult diagnosis is recorded by Newman, of Glasgow.[10] His patient had suffered from continuous pain in the lower dorsal region for four years, and one year before he was seen, had a severe attack lasting a month, and affecting the abdomen as well. For seven months he had been aware of the presence of a swelling in the abdomen. Slight fulness was present in the right iliac and lower lumbar regions, and a rounded swelling passing upwards and backwards was discovered. There was dulness on percussion, exceeding the limits of the swelling, and covering an area of about two inches in breath, running parallel to Poupart's ligament. A sense of fluctuation was obtained over the swelling. The case simulated one of perityphlitic abscess. On operation the swelling was found to be the right kidney, normal in size and surrounded by a thick adipose capsule. The sense of fluctuation, which disappeared on cutting through the muscles, was found to be as marked as ever when the wound had healed.

The points which, according to Deaver, are most important in coming to a decision between appendicitis and movable kidney are the following: In appendicitis there is the sudden onset of acute abdominal pain, often after some dietetic indiscretion. The pain is at first referred to the epigastric or umbilical region, and later becomes localised to the right iliac fossa. Fever and a rapid pulse point to appendicitis, and the rigidity of the lower rectus abdominis and flat abdominal muscles is more limited than in the case of movable kidney. The specially tender point of appendicitis is more circumscribed than the tenderness found in movable kidney, which covers a wider area and is not so intense, and further, the pain in the latter is referred to the kidney or along the ureter. Nausea lasting for several days is sometimes a prominent symptom in movable kidney. In some cases where pain and rigidity are present, the greatest care in examination fails to reveal the nature of the condition, and an anæsthetic becomes necessary to clear up the case.

Mr. Edmund Owen[11] gives an account of an unusual case of a very neurotic man suffering from constant abdominal pain, in whom a firm fixed tumour was discovered in the hollow of the sacrum, and

there was apparently some narrowing of the rectum. Two surgeons gave their diagnosis as malignant tumour and simple adenoma with intussusception of the rectum, respectively.

Mr. Owen was unable to come to a diagnosis. After opening the abdomen and dividing the meso-rectum, the tumour was removed and was found to be a displaced left kidney of normal size.

Treatment of Movable Kidney.— Deaver, Harte and Da Costa [12] have expressed their dissatisfaction with the ordinary method of suture of a movable kidney, the results of which have not proved uniform. In their experience, the method of gauze packing introduced in Germany, and practised in America by Senn, gives more favourable and lasting results.

The following is a brief summary of the method: The kidney is exposed by a vertical incision, and its fatty capsule dissected away until the hilus is reached. The fibrous capsule is next scarified with the knife without encroaching upon the kidney substance. Two long strips of gauze are now placed one beneath each pole, and the kidney is replaced. Gauze is packed round the organ and the two strips tied over this. A large gauze pad is placed over the kidney in front, and the whole secured by adhesive plaster. The gauze is removed after a week or ten days, and the granulating wound gently repacked. The wound heals in four or five weeks.

Bazy,[13] since 1885, has practised a method of suture which he terms *Nephropexie en hamac* (hammock operation), and claims excellent results. He passes three sutures through the fibrous capsule, and brings the ends of the upper one through the lowest intercostal space and ties them. The lower sutures penetrate the muscles close to the twelfth rib. Another suture of catgut is now passed through the muscles close to the last rib, through the fatty tissue, and by a series of stitches below the kidney, and finally through the muscles again. This braces up the fatty tissue in the form of a hammock. On one occasion he penetrated the pleura with his upper suture, without, however, doing any harm.

Renal Tuberculosis, its Diagnosis and Surgical Treatment. — As Newman [14] very properly insists, it is the diagnosis of tuberculosis in its early stage to which most attention should be directed, for at a later period surgical interference is of little value.

Evidence of great importance may be obtained in the urine, and a careful examination of the secretion should always *precede* the introduction of any instruments. Polyuria is one of the earliest signs in renal tubercle, and results, no doubt, from the hyperæmia due to the irritating properties of the bacilli. Occurring alone, it is very readily

overlooked, but is more likely to be noticed when, as sometimes happens, albumin is present in the urine.

The albuminuria depends upon the discharge of inflammatory material in the urine, and will appear when the tuberculous lesion communicates with the urinary tract, but is wanting in the case of a tuberculous nodule buried in the renal parenchyma. Hæmaturia is usually slight, but Newman points out that, as in pulmonary phthisis, hæmorrhage may occur, and may even be profuse, long before other signs of tubercle develop. These premonitory attacks of hæmaturia may be extremely puzzling, and it is only by repeated and careful examinations of the urine that their true significance may be read. In these early attacks the urine contains no tuberculous débris recognisable by the naked eye or microscope, but the characteristic bacilli may be revealed by cultivation or by inoculation experiments.

As the disease progresses the characteristics of the urine become more pronounced. The albumin increases in amount, the reaction tends to become alkaline, the urine is opaque and cloudy from suspended pus and mucus, and a varying deposit of granular tuberculous *débris* and pus is present. The clear urine of Bright's disease containing albumin and tube casts should not give rise to confusion.

Newman states that profuse hæmaturia is of rare occurrence in renal tuberculosis. Trautenroth, however, describes an unusual case of tubercle of the kidney, where nephrectomy became necessary on account of the excessive loss of blood. At a later stage the urine becomes increasingly offensive and the deposit more marked.

The prognosis in renal tuberculosis is very grave, and especially is this so when the disease is no longer confined to the kidney.

A focus of tubercle limited to one organ or a part of it is more favourable. Spontaneous cure of small discrete nodules, which become replaced by fibrous patches, may occur. In other cases larger tuberculous masses have become encapsuled and dried up, leaving putty-like masses. These remain quiescent so long as they are undisturbed, but an injury will at once re-awaken their activity.

The cases most suitable for operation are those where the disease is limited to the kidney, that is to say, cases of primary tuberculosis of the kidney which has not yet extended to other parts of the urinary system. These are the cases in which diagnosis is of necessity most difficult, but they are the only cases in which operative measures are likely to be of any lasting benefit, and as Newman aptly says: "The medical attendant who makes an early diagnosis in a case of renal tuberculosis, renders a service to his patient as valuable as that of the

surgeon who, at a later date, performs a successful nephrotomy or nephrectomy."

Hurry Fenwick [15] has brought forward cases to show that an early diagnosis of renal tubercle can be made by examination of the ureteric mouths by the cystoscope.

Nephrotomy is the operation which, in the past, has been most extensively practised. Incision of the kidney and drainage gives exit to the accumulated pus and débris, and for a time some benefit is obtained. The operation does not, however, provide for the arrest of the downward progress of the disease along the ureter; and further, the continued presence of a freely discharging sinus in the loin is a source of pain and inconvenience, if not of grave danger to the patient. In Guyon's experience,[16] no patient survived the operation of nephrotomy for renal tuberculosis longer than two years. At the best, nephrotomy must be looked upon as a palliative operation, and should be limited to those cases in which the disease is progressing rapidly, coupled with a condition which does not allow of a prolonged and severe operation. Other indications for nephrotomy consist in the presence of perinephritic abscesses, or a doubtful stress resistance of the opposite kidney. In the majority of instances it is to be regarded as a means of diminishing the fever and improving the general health of the patient before proceeding to the radical operation of nephrectomy.

Nephrectomy is the best method of treatment, and in suitable cases is attended with some prospect of ultimate success. Before proceeding to remove the kidney, however, it is necessary to ascertain that the disease has not yet invaded the bladder; and further, reliable information must be obtained of the health of the kidney which is to perform the entire urinary functions. Hurry Fenwick [15] has shown that the cystoscope here proves of great value in excluding disease of the bladder, in localising the renal disease, and in giving some idea as to the secretion of the other kidney, but for exact information regarding the latter the ureteral catheter must be used.

Albarran [17] obtained sufficient information by this method to determine him in removing a tubercular kidney where all the symptoms pointed to bladder trouble. Tilden Brown and Johnstone [18] also give evidence as to the value of this method.

Sometimes even by these methods of examination, trustworthy information cannot be obtained, and the proposal to cut down and examine each kidney from the loin as a preliminary step to a future nephrectomy is a valuable one, although it is evident that only a few

of the patients under consideration will be in a condition to allow of such thorough exploratory measures.

Nephrectomy secondary to nephrotomy is a more difficult operation than primary nephrectomy, but very often the condition of the patient leaves the surgeon no choice in the matter. Sub-capsular nephrectomy is often found suitable for these secondary cases.

Removal of a portion, or sometimes the whole ureter, along with the kidney is in most cases necessary, for a troublesome sinus may remain, and, as Johnstone has remarked, the discharge of tubercle bacilli may continue. If the extended operation threaten to overtax the patient's powers of resistance, the ureterectomy may be deferred to some subsequent date.

Partial nephrectomy is probably not well suited to tubercular disease of the kidney.

Guyon,[19] at the French Surgical Congress (1898), records sixteen recoveries out of seventeen primary nephrectomies for renal tuberculosis. Combining his cases with those of Czerny, Bardenheur, Küster, Israel, Tuffier and Routier, a mortality of 10 per cent. is obtained. The mortality in eighty-four nephrotomies for renal tuberculosis was 17 per cent. The published mortality of primary nephrectomy is 28 per cent., while that of secondary nephrectomy reaches 34 per cent.

Tumours of Kidney.—Bland Sutton[20] contributes an interesting paper on malignant tumours of the kidney. In discussing the pathogenesis of these tumours, he notes that the connective tissue in the sinus of the kidney is particularly abundant in late fœtal life and at birth. And that the sarcomata of infants arise from the pelvis of the kidney, while those occurring in adults, as a rule, take origin in connection with the kidney capsule. In infants, the sarcomata springing from the connective tissue of the kidney sinus gradually expand the kidney until it forms a thin capsule surrounding the tumour. The tubules often found in these congenital sarcomata, he now agrees with Paul in ascribing to inclusion of the kidney tubules by the invading growth, while the striated cells of the rhabdomyosarcoma take origin in the muscular wall of the renal pelvis. These tumours are strictly extra-renal in origin, and do not tend to invade the ureter. This fact explains the absence of urinary symptoms in these cases, and probably also, from the absence of obstructed overflow, the remarkable freedom from pain. Invasion of the veins is invariable in these infantile tumours.

From an analysis of a large number of cases of nephrectomy for renal sarcoma in infants under six years, Mr. Sutton finds that the

mortality is over 50 per cent., while forty-five of the fifty who survive the operation, die of recurrence within a year. The following table accounts for the remaining five cases.

Table of cases in which life was prolonged beyond one year by nephrectomy:—

	Reporter.	*Age.*	*Results.*
(1.)	Hicquet	6	Died 1½ years after operation.
(2.)	Schmidt	6 months	Alive and well 3 years later.
(3.)	Abbé	2½ years	Alive and well 5 years later.
(4.)	Abbé	1 year, 2 months	Died 4½ years later from sarcoma of remaining kidney.
(5.)	Malcolm	1⅝ years	Alive and well 6½ years later.

Adult sarcomata arise in connection with the renal capsule. Whether or not Grawitz's theory of the origin of the tumours resembling suprarenal tissue from adrenal rests is accepted, there is no doubt that they differ structurally from the ordinary round and spindle-celled type. They show their malignancy both by local recurrence and general metastasis. Absence of hæmaturia is a remarkable feature in their clinical history.

Carcinomata are uncommon before middle life, and increase in frequency after fifty. They arise from the epithelium of the uriniferous tubules, and tend to invade the pelvis of the kidney and to creep along the ureter. This fact explains the frequency of hæmaturia in these cases.

Renal carcinomata are unilateral and do not grow to such enormous dimensions as do sarcomata. Mr. Sutton believes that secondary deposits are unusual.

The results of operative interference are as bad in the adult as in the child. The operative mortality from published records is "at least 50 per cent." More than half of those who survive the operation die from recurrence within six months, and nearly all the remainder within a year. Sutton believes the adrenal type of tumour is the least malignant.

At a meeting of the Belgian Society of Surgery, Verhoogen[21] presented a patient whose left kidney he had removed five years before for a glandular carcinoma which infiltrated the entire organ. There are only five other cases in the literature in which life was prolonged over four years.

Tumours of the Suprarenal Capsule.—Otto Ramsay[22] has been able to collect sixty-seven cases of primary malignant tumour of the suprarenal capsule, only five of which were operated upon. The

number of operated cases of undoubted suprarenal tumour is, however, greater than this, for eleven are tabulated in the "Medical Annual" for 1900, p. 538.

Ramsay gives the following symptoms as having been present in the cases he collected :—

(1,) Rapid and well-marked loss of strength (twenty-two out of thirty-seven).

(2,) Emaciation sometimes slight, rarely marked (twenty cases).

(3,) Digestive disturbances, nausea, vomiting, anorexia, diarrhœa or constipation.

(4,) Pain, renal, epigastric, hypochondriac, dorsal, or referred to the knee or ankle.

(5,) Circulatory disturbances, but less requently than in Addison's disease.

(6,) Skin changes were exceptional. Only three out of thirty-seven cases showed distinct bronzing. Hypertrichiasis was observed in some cases.

(7,) Hæmaturia occurred in two cases, and renders differential diagnosis more difficult. As a rule, however, urinary symptoms are absent.

(8,) An abdominal tumour was found in a number of instances, but the exact percentage could not be ascertained from the reports.

The kidney is often displaced by the tumour, and may even form a prominence on its surface with the typical reniform outline.

Morris[23] believes that extreme mobility will be found a notable symptom. It was very marked in two of his cases.

"Shoulder-tip pain," according to Mayo Robson,[24] is a well-marked symptom in some cases and of diagnostic value.

The tumours are more frequently found in males, and children are often affected (more than one-third, Roger Williams). They grow very rapidly, frequently affect both glands, and early form metastases.

The average duration of life is 6·7 to 10·6 months, as compared with three to six years in malignant renal tumours.

In seventeen nephrectomies for supposed struma supra-renalis, five died (29·4 per cent.). The mortality for sarcoma in the same series was 20 per cent., and for carcinoma, 22·56 per cent. (Heresco).

In eleven cases of undoubted suprarenal tumours, five died, or over 45 per cent.[25]

REFERENCES.—[1] "Lancet," May 13, 1899; [2] "Ann. Surg.," Dec., 1899; [3] Ibid.; [4] "Brit. Med. Journ.," Feb. 3, 1900; [5] "Therap. Gaz.," April 15, 1900; [6] "Amer. Journ. Med. Sci.," Aug., 1899; [7] "Cardinal Symptoms," also "Proceed. Brighton Medico Chi. Soc.," 1898;

[8] "Lancet," Jan. 6, 1900 ; [9] "Ann. Surg.," June, 1899 ; [10] "Med. Press and Circ.," May 3, 10 and 17, 1899 ; [11] Ibid., May 10, 1899 ; [12] Ann. Surg.," June 1899 ; [13] "Bull. et Méd. de la Soc de Chir.," Oct. 31, 1899 ; [14] "Lancet," Feb. 24, March 3 and 10, 1900 ; [15] "Hurry Fenwick, "Ulceration of the Bladder, Simple, Tuberculous and Malignant," 1900: [16] "Braithwaite's Ret.," June, 1899 ; [17] "Bull. et Mem. de la Soc. de Chir. de Par.," Oct. 11, 1899 ; [18] "Ann. Surg.," May, 1899 ; [19] Report of French Surg. Congress in "Journ. of Amer. Med. Assoc.," Dec. 17, 1898 ; [20] "Clin. Journ.," May 24, 1899 ; [21] "Ann. des mal. des org. Gen-urin.," No. 7, 1899 ; [22] "Johns Hopkins Hosp. Bull.," Jan., Feb., March, 1899 ; [23] "Brit. Med. Journ.," Nov. 11, 1899 ; [24] "Therap. Gaz.," Oct. 15, 1899 ; [25] "Medical Annual,"-1900.

KNEE (Excision of the). *Priestley Leech, M.D., F.R.C.S.*

Howard Marsh[1] has a clinical lecture on the present uses of excision of the knee joint. He says the cases in which excision, with few exceptions, is advisable are limited to adults and adolescents, in whom the growth of the limb is complete, or nearly so, and the bones have acquired so firm a texture that after the operation they readily undergo an unyielding synostosis.

He arranges such cases in the following groups :—

(1,) The cases in which the joint has become fixed in a position of deformity. The majority of such cases are tuberculous, but others are the result of septicæmia, gonorrhœal arthritis, etc. In this group the operation is resorted to for the purpose of removing the deformity.

(2,) Cases in which the joint is incapacitated by incomplete fibrous ankylosis resulting usually either from tuberculosis or septicæmia. This incomplete fibrous ankylosis gives rise on exercise to irritability and pain.

(3,) A group of cases in which excision may be required is that in which, by a process regarding which very little is at present known, a variable number of the joints one after the other become inflamed, slightly overwarm and somewhat painful, and then in the course of a few months fixed by complete bony ankylosis in a position of flexion unless care has been taken by the use of splints to prevent this. If the knees only are concerned in the lower extremities rectification of position by excision may enable the patient to be to some extent active.

(4,) When, as the result of osteo-arthritis, the knee joint has undergone extensive structural change there are, though they are rare in practice, one or two conditions in which excision may be performed alike with safety and great advantage to the patient : first, when the ligaments have become weakened and relaxed so that the joint is reduced to a loose, almost flail-like condition ; and secondly,

when the joint has become fixed at such an angle of flexion that the limb is useless. He recommends Gant's apparatus and the use of sterilised steel pins.

REFERENCE.—[1] "Lancet," Nov. 18, 1899.

KNEE JOINT (Contraction of). *Priestley Leech, M.D., F.R.C.S.* *Lengthening of Hamstrings for Contracture after Burn.*—Brook [1] describes a useful method of lengthening the hamstrings. The patient, a boy of fourteen had contraction of the left knee-joint due to a burn at the age of three years. An extensive cicatricial web stretched from the middle of the leg to a point two-thirds of the way up the thigh preventing extension beyond a right angle; the head of the tibia was displaced backwards and outwards, the condyles of the femur standing prominently forward. The web was dissected away and fascial bands divided allowing the knee with a little force to be extended to about 135 degrees; further straightening was impossible without division of the hamstring tendons. The biceps tendon was split for three inches near its insertion, divided and sutured as shown in *Figs.* 11 and 10 *b b'*. The inner hamstrings, which were too attenuated to be split with safety, were divided transversely at different levels, 3 inches apart (*Fig.* 11 *T T'* and *M M'*). The proximal end of the semi-tendinosus, which had been cut at the lower level, was sutured to the distal end of the semi-membranosus which had been cut at the higher level. The other ends were shunted into their neighbours and sutured. Further extension was impossible owing to the shortening of the popliteal nerves and gracilis but especially the former, but it was decided to overcome these by extension. The wound was covered as far as possible by undermining the surrounding skin and lacing the edges towards each other. The surface, which was uncovered, was subsequently covered in by flaps and the patient was discharged on June 3, with the knee straight but

Fig. 10.

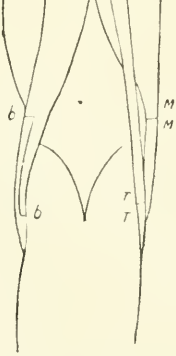

Fig. 11.

Fig. 12.

wearing a Thomas's hip splint. Three months later he had complete range of flexion and extension.

REFERENCE.—[1] "Brit. Med. Jour.," April 21, 1900.

KNEE JOINT (Internal Derangements of).

Priestley Leech, M.D., F.R.C.S.

W. H. Bennett [1] gives an analysis of two hundred cases of internal derangements of the knee joint. There were one hundred and eighty-two males and eighteen females; all cases which could be classified under the head of "loose bodies" were excluded. The left knee was affected in one hundred and thirty-three cases and the right in fifty-seven. The inner side of the knee was affected in one hundred and fifty-five cases and the outer in forty-five cases. With the exception of twenty cases, which were far advanced, all were at first treated by temporary rest, massage and exercises; of these one hundred and twelve were cured, eighty-three without the use of any support or other apparatus. In thirty-nine, temporary support was necessary for periods varying from three months to one year. In fifty-eight cases support was used permanently. Operation was performed in twenty-seven cases, all males. Of these twenty-seven cases the semilunar cartilage was at fault in fifteen only; of the remaining twelve, small pedunculated bodies were the cause in four instances, and in eight cases abnormal folds of synovial membrane springing from or near the ligamentum mucosum. In the fifteen cases where the semilunar cartilage was at fault the left knee was affected in twelve. Bennett believes that the fulness along the line of the semilunar cartilage, often felt in these cases, is more often due to swelling from blood extravasation with or without inflammatory exudation than to the cartilage itself.

The causes of internal derangement of the knee joint he gives as follows: (1,) Displacement of semilunar cartilage: (2,) Nipping of folds or shreds of synovial membrane between the bone ends; (3,) Loose or pedunculated bodies in joints; and (4,) Bruising of the peripheral edge of a semilunar cartilage and its attachments without displacement or loosening. The immediate result is a local effusion of blood, and subsequently a certain amount of inflammatory effusion, and the two together act as a foreign body between the ends of the bones. Bennett has seen no reference to this latter as a cause in the milder cases of so called slipped cartilage. His reason for thinking the bruising of the cartilage and subsequent effusion accounts for some of the cases is that where the limitation of movement in the joint is due to displaced cartilage, a loose cartilage, or a fold of

synovial membrane. manipulation reduces it, and the leg can immediately be extended. In other cases, however, no manipulation will enable the leg to be fully extended, and in these cases full extension cannot be made under an anæsthetic, or if it can by severe pressure on the front of the joint the limb immediately springs back into a partially flexed condition on removal of the pressure. An important point to notice is that recovery of the extension is gradual, never sudden, in these cases, the recovery of movement being due to the slow absorption of the effused products. Operation on two cases has proved the correctness of this view of Bennett's, the semilunar cartilage being thick, resembling sodden felt, and the parts about the base of the cartilage inside the capsule of the joint were swollen and infiltrated with blood and exudation products.

The treatment may be considered under three heads: (1,) By temporary rest, massage and exercise; (2,) By the use of apparatus; (3,) By operation. If replacement can be effected it should be done, but care must be taken that repeated attempts at replacement are not made in those cases where the symptoms are due to bruised cartilage as some of the worst cases of traumatic arthritis have been due to this. The immediate treatment of all cases, whether replacement of a loose body has been made or not, is rest on a splint and the application of hot lead and opium lotion for four days or a week. No movements of the joint should be allowed until the effusion has gone; massage of muscles and joint *without movement* of the joint cannot be commenced too soon. When the effusion has disappeared, which is rarely later than a week, passive motion may be commenced, care being taken that no rotatory motion is imparted to the leg. The object of the temporary fixation and massage is first of all to remove the fluid, and secondly, to allow the loose portion of the cartilage to fall back and adhere to its normal site. At the end of a fortnight pedal exercises may be freely used, the massage being continued, and at the end of three weeks from the date of the injury, the patient who has hitherto been walking with a stiff leg begins ordinary walking exercise. In massage of the muscles, Bennett says, it must not be forgotten that one factor in the tension of the capsule of the knee joint is the ilio-tibial band, the elastic tension of which is upheld by the gluteus maximus and the tensor fasciæ femoris. With regard to treatment by supports no support or apparatus of any description should be employed unless absolutely unavoidable. The use of artificial supports always tends to render permanent the wasting of the thigh muscles which ensues after a derangement of this kind. In case of loose bodies, other than a displaced cartilage, operation is the

method of treatment. The object to be attained by any apparatus is prevention of rotation of the leg at the knee.

The cases in which an apparatus may be employed are : (1,) Where the rational treatment cannot be carried out ; (2,) Where rational treatment fails to restore the normal tension of the knee capsule or where abnormal lateral mobility remains to any marked extent in spite of treatment. As regards operation, opinions vary very much. In cases properly treated from the first the percentage of cases in which operation is required is very small indeed, and under any circumstances operation should be postponed until other treatment has failed to satisfy the patient.

Operation is indicated in (1,) Cases where non-operative measures have failed to satisfy the patient or modify the symptoms ; (2,) In cases where flaccidity of the joint is in excess of other symptoms (this is, Bennett thinks, an operation strongly indicated in these cases, but where the semilunar cartilage is affected the tendency to defective results is strongest in these cases) ; (3,) Cases of expediency, *e.g.*, in soldiers, sailors, etc. ; (4,) In grossly neglected cases in which from long continued inflammation the joint has assumed the aspect of pulpy disease. The reasons for thus restricting operative measures are, the vast majority are curable without ; operation is not free from risk and the results of operation are not always perfect. The success of operation also depends on the treatment before and after, rather than upon any special method of operating.

Bennett's plan is as follows : Keep patient in bed a week prior to operation, daily massage without passive motion ; don't operate until all fluid has disappeared from the joint. After operation, massage of limb above and below the knee without removal of the dressings ; gentle passive motion of the patella to prevent its becoming fixed is commenced on the fourth day, the dressings being removed if necessary for this purpose : at the end of a week passive movement of the limb is commenced. Skilled muscle massage he believes to be of the greatest use.

REFERENCE. — "Lancet," Jan. 6, 1900, p. 6.

KRAUROSIS VULVÆ. (See "Vulva.")

LABOUR. *Edward A. Ayers, A.M., M.D. New York.*

Anæsthesia during Labour.—Henson[1] concludes that morphine, grain $\frac{1}{12}$ to $\frac{1}{3}$, has no retarding influence on pains or abdominal pressure : that ether lessens the strength of pains in one or two minutes and prolongs the intervals, and that the pains become of full strength again in from five to twenty minutes after removal of the

ether. Chloroform diminishes the pains and also has a tendency to sustain uterine atony.

Posture in Labour.—The claim that the position known as "The Walcher Posture" lengthens the diameter of the conjugata vera (0·5 to 0·9 cm.), is generally accepted as correct. This gain will only be of use in pelves with contractions of the conjugata vera. The writer tested in post-mortem the posture by direct measurements with the abdomen laid open, and found a gain of $\frac{2}{5}$ inch.

Placenta Previa.—Attention has been given chiefly on this topic to the means to be employed in securing dilatation and preventing hæmorrhage. Some prefer the sterilised gauze tampon, some the Barnes' bag, some the Champetier de Ribes bag, and others direct manual dilatation. The Barnes' bag skilfully held in the cervix until full dilatation has been secured will best prevent loss of blood and death of the child. The de Ribes bag is more satisfactory in the keeping it in place when once introduced, but causes more interference with placental function while dilatation is being obtained and consequent loss of fœtal life.

The After-coming Head.—Stahl [2] reports a delivery in a case of hydrocephalus by first decapitating and then emptying the skull of brain and water to some extent, and traction by hooking the fingers in the foramen magnum. He favours this method over catheterisation of the spinal fluid, and in fact over basiotripsy.

Cæsarian Section.—The various incisions practised Gerbaud names as follows: Posterior surface (Cohnstein); anterior surface (Kehrer); tranverse lower segment (Kehrer); longitudinal middle third (Sänger); transverse fundal (Fritsch); sagittal fundal (Müller-Caruso); longitudinal, from fundus to Bandl's ring (Bar).

Cohnstein's method has given many failures; Fritsch's incision may be used in certain cases to advantage. The method of Bar is probably best applicable in the majority of cases.

Hahn [3] reports sixty-two sections by Fritsch's method. The transverse fundal incision is believed to lessen the blood loss, as most of the vessels run transversely, and the sutures better constrict the vessels than by other methods. These views are opposed by Braun and Everke. Liability of intestinal adhesion is thought greater in this method. There can be said to be no definite acceptance of any one method at the present time, much being left to the individual judgment at the time of operation.

The indications for Cæsarian section have received no marked definition during the past year. Writers seem much influenced by their individual predilection for different methods. The Cæsarian

section has been performed much more frequently than heretofore, chiefly instead of craniotomy, and the mortality rate has steadily decreased. Reynolds[4] emphasises the importance of early operation, before any intra-uterine manipulation has occurred, upon the death rate, the difference being very remarkable.

The risk taken by the physician in performing Cæsarian section hastily upon pregnants suddenly dying undelivered, and without the consent of those in authority, is discussed by Colle.[5] Dohrn reported several cases in which death was only apparent. Thirty-six post-mortem Cæsarian sections have been performed in Wurtemberg in one hundred thousand confinements. Kendall saved one child in two such operations for ruptured uterus and maternal death. Ayers[6] advocates incision of the cervix and delivery, per vaginam, in preference to abdominal section whenever possible, and reports a case.

The choice of sutures for the womb is discussed by Sippel.[7] He favours catgut in preference to silk because the latter acts through capillarity upon the intra-uterine fluid and may thus carry germs to the outer surface.

Vaginal fixation necessitated Cæsarian section in a case reported by Kallmorgan.[8] The traction forward of the fundus caused a transverse presentation of the fœtus with no engagement. The posterior wall of the uterus was very thin. The writer advises premature delivery in such cases.

Cephalometry.—Perret[9] reports the results of his efforts at measuring the fœtal head through the abdominal wall. He employs a cephalometer (*Fig.* 13) specially constructed, and endeavours to obtain the occipito-frontal diameter of the fœtal head as it lies (usually) transverse in the uterus. Deducting from this the double thickness of the abdomen and uterine wall, and also 25 mm., he claims to closely approximate the bi-parietal diameter. The method is worthy of further tests.

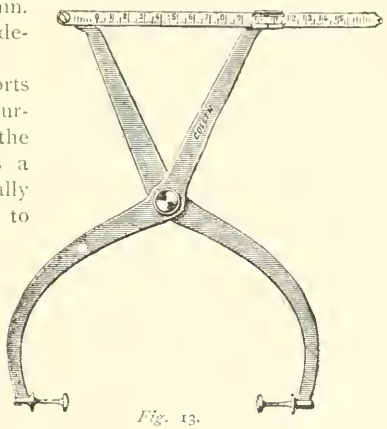

Fig. 13.

Hillman tabulates forty cases of Cæsarian section for eclampsia as follows: In one the operation was performed post-mortem, the child

being saved; of the others twenty women died and nineteen recovered, a maternal mortality of 51·3 per cent.; of the forty-one children, twenty-three recovered, and eighteen died, a fœtal mortality of 43·9 per cent. In every case repeated seizures had occurred before the operation, labour either had not begun or was hindered by the presence of some complication such as pelvic contraction or fibroid tumours, and in fourteen out of the thirty-nine cases the mother was *in extremis* from coma or pulmonary œdema. Considering the serious nature of the conditions under which the operation was performed, the results must be regarded as encouraging. The mortality of all cases of eclampsia is generally estimated at 30 per cent., and many are, of course, slight in comparison with those referred to here. It is curious to note that in six cases the fits recurred after the operation; of these, four recovered, including one who had thirty post-operation seizures.

Umbilical Cord.—The diagnostic points in cases of excessively short cords are given by Brinckner[1] as follows: (1,) Recession of the head in the intervals of pains; (2,) Arterial bleeding during and between uterine pains; (3,) Urination in small quantities in the intervals of pains after the establishment of the second stage; (4,) Pain over the placental site, especially during a uterine contraction or during the application of the forceps; (5,) A desire of the patient to sit up; (6,) Uterine inertia.

How to treat the cord has been a topic of considerable discussion. Dickinson[2] has shown the need of improvement in view of a mortality from sepsis through the cord estimated at from $3\frac{1}{2}$ to 22 per cent. He advocates complete dissection of the cord and over-closure of the stump with skin, dissecting out the vessels first and ligating them. His method has received thoughtful consideration but not met with much favour, as being unnecessarily radical. Ahlfeld has claimed ideal results from the use of 96 per cent. of alcohol used with cotton to saturate the cord and dress the stump. The chief cause of the high mortality from the most customary method, dry powder and gauze dressing, is want of appreciation of the dangers of sepsis and consequent carelessness.

Craniotomy.—There has been no change of importance in connection with this subject. The most experienced operators avoid craniotomy as much as possible, and when it must be done use either a Braun's or Martin's trephine to perforate the skull—whether it is done at the vault or base—and a Lusk cephalotribe for crushing the head and removing it. Basiotripsy, if done with a Braun trephine is as easy to do as craniotomy.

Cystitis.—Fothergill recommends for irritable bladder following confinement :—

℞ Salol
Tinct. Hyoscyami āā ℥ij | Infus. Buchu q.s. ad ℥vj

M.

Sig.—Tablespoonful three times a day.

Deciduoma Malignum.—Durante[12] has recently published an exhaustive article upon this subject, and his conclusions are as follows :—

Deciduoma malignum also results from pregnancy. The earliest symptoms may appear without prodromata, or may be preceded by a placental polypus, or hydatidiform mole. The *debut* of deciduoma malignum is usually marked by repeated attacks of metrorrhagia which cannot be arrested, and which lead to profound anæmia, often mortal. Intra-uterine examination reveals a tumour which is soft and pliable, and inserted into the uterine wall at a point where the latter is exceedingly thin. Metastases may occur anywhere, but, as a rule, are most common in the lungs, where they often simulate tuberculosis. Diagnosis is chiefly established by microscopical examination of intra-uterine fragments.

Cure is possible, but no time should be lost in currettage. The only interference justifiable is total hysterectomy. This operation should not be performed until the possibility of pulmonary metastasis is excluded.

Histologically, deciduoma malignum arises from the fœtal ectoderm in its placental portion. It is a malignant recurrence of the epithelial portion of the physiological placenta—a fœtal epithelioma. Its malignancy is due to its embryonal rate of growth with its immediate invasion of the uterine vessels, and early metastases.

Drugs Contra-indicated in Nursing Women.—Marfan[13] prohibits opium, morphine, atropine, hyoscyamus, colchicum, arsenic, cocaine, chloral, the salts of lead which are precipitated by milk, digitalis, ergot, and antipyrine in those cases in which they act badly.

Dystocia due to Bandl's Ring Contraction.—Veit[14] denies the existence of "isolated ring-contraction." That is, contraction limited to the ring only, while atony of the remainder of the uterus exists. He therefore advises the use of narcotics in preference to mechanical dilatation.

Eclampsia.—Levniovitsch[15] describes a bacterium of eclampsia that bears some strong arguments in favour of the truth of his position, although we cannot accept the work of any one man as conclusive. He found large, oval and round cocci, very automobile, in each of

forty-four cases of eclampsia. Considered as planococci, in twenty-five out of twenty-eight cultures the products were identical.

Placental tissue was the best nutritive medium. These "planococci" were found in the blood in numbers proportionate to the nearness to the eclampsia crisis, even being found in women giving usual prodromata. Their injection into guinea pigs caused hæmorrhagic endometritis in a month, and occasional tetanic spasms in rabbits. The germs were also found in infants born of eclamptic mothers. There is nothing shown as to the causal or resultant relation of these germs to eclampsia.

Jewett[16] utilises the improvement that so generally follows the adopting of a milk diet by patients threatened with eclampsia to prove that the toxic element is developed in the digestive tract from meats.

Much general attention has been given to the value of quantitative urinary excretion and variations in the amount of urea secreted, in watching for attacks, without losing sight of the importance of albuminuria. Bar[17] reports cases of eclampsia without oliguria, and of treatment producing great polyuria, yet without improvement, but emphasises the rule of oliguria present. He refers to Jurgen's discovery of a specific lesion of the liver, but refrains from determining its relation to cause or effect.

TREATMENT.—The most prominent subject of discussion has been the use of **Saline Solution** given either by direct injection into the vein, or under the skin, or into the colon. The present view in favour of eclampsia being due to the excess of some toxic elements in the blood naturally has led to very general use of saline solution as the most active means of washing out the poison.

Jardine[18] relates his experience with a solution composed of ½ a drachm each of **Bicarbonate of Potash** and ordinary **Salt** to the pint of sterilised water at 100° F. He claims much more active diuresis by adding the potash. He also used **Sodium Acetate** in the place of bicarbonate of potash. There is danger of poisoning from this use of the potash. The results obtained from hot saline injections generally have been very satisfactory. It should be a rule to employ injection into the colon by preference, when it is feasible, to avoid septic risk and especially to prevent the danger of over-distending the heart by direct and rapid increase in blood-volume, such as is apt to follow direct intra-venous injection. The heart is under great strain during convulsive seizures, which dam back the blood from the lung circulation, and it is due to this fact that blood-letting has often proved serviceable.

Emptying the uterus as a routine measure in eclampsia has been called in question by Ayers,[19] because there are many cases in which the immediate attack can be checked by the use of eliminants and anti-convulsivants ; the rapid induction of labour and removal of the fœtus is, *per se*, an irritant, and emptying of the uterus can be just as well performed more gently after the conditions exciting the attack have been temporarily removed.

Veratrum Viride has continued to receive hearty support in the treatment of eclampsia. The best rule to follow in its administration is to give it hypodermically in doses measured almost entirely by the effect on the pulse. The pulse rate should be brought down to 60 a minute if possible. It may require doses far above ordinary amounts to get such results. As much as 2 to 3 drachms of the tincture have been given in twelve hours.

Emphysema of the Uterus.—Halban[20] describes perhaps for the first time a condition which he terms "gas sepsis" of puerperal origin. Under the influence of a gas-forming bacterium there is an enormous production of air-bubbles in the uterus and later in the blood and viscera.

Fœtal Circulation.—Alcohol imbibed by the mother has been shown by Nicloux[21] to pass into the fœtal circulation in sufficient quantity to cause alcoholism ; and, if repeatedly imbibed, chronic intoxication, with consequent congenital alcoholism, as expressed in nervous derangements, etc. This evil is further intensified if the child must nurse from such a mother's breast.

Hæmorrhage.—The use of a solution of **Gelatin,** 2 to 10 per cent., dissolved in a solution of **Chloride of Sodium** in water, 1 in 100, for checking hæmorrhage is reported by Bertino.[22] He considers it as not only a coagulator of the blood, but a vaso-constrictor as well.

Lyle[23] reports on the treatment of accidental hæmorrhage in severe cases in the Rotunda Hospital ; twenty cases were treated by accouchement forcé with ten deaths, and fifteen cases were treated by vaginal plugging with sterilised cotton wool with no deaths.

The use of saline solution following hæmorrhage receives wide consideration and approval. Care must be taken in its use where hæmorrhage has ceased as the result of thrombus formation in the uterine sinuses not to inject it too freely directly into the vein, as this is liable to so increase vascular pressure that the thrombi may be forced out and permit further hæmorrhage.

Puerperal Infection.—Remarkably poor results have been wrought out bearing upon puerperal infection during the past year. The anti-streptococcic serum, from which much was expected, has been

generally rejected as useless. The presence of portions of placenta in the uterus is always to be considered in infection. Pinard considers it too early on the second day to currette, and too late by the fifth day. He advises irrigation of the uterus on the first rise of temperature and employment of the curette after the second rise of temperature between the second and fifth days. Exploration of the cavity with the hand is preferable to an instrument, but neither should be employed until the diagnosis excludes, in so far as it can at an early date, other cause than sepsis.

Hysterectomy for sepsis cannot be said to have made material advance, although it is receiving continued and careful attention.

REFERENCES.—[1] "Arch. f. Gyn.," vol. lv, No. 1; [2] "Amer. Jour. Obstet.," April, 1899; [3] "Cent. f. Gyn.," Dec. 9, 1899; [4] "Obstetrics," vol. ii, No. 1; [5] "Echo Méd. du Nord.," June 23, 1899; [6] "Obstetrics," Aug., 1899; [7] "Archiv. f. Gyn.," 1899, Band lvi, Heft 3; [8] "Zeits. f. Geb. u. Gyn.," xli, 2; [9] "L'Obstetrique," Nov., 1899, and "Obstetrics," April, 1900; [10] "Amer. Jour. Med. Sci.," Nov., 1889; [11] "Amer. Jour. Obstet.," July, 1899; [12] "Rev. Méd. de la Suisse Romande"; [13] "Jour. de Méd. de Paris," Oct. 22, 1899; [14] "Monats. f. Geb. u. Gyn.," Feb., 1900; [15] "Cent. f. Gyn.," No. 46, 1899; [16] "Med. Times," Oct., 1899; [17] "Le Bull. Méd.," March, 1900; [18] "Glasgow Med. Jour.," June, 1899; [19] "Obstetrics," Feb., 1900; [20] "Schaustus Fests. Monats. f. Geb. u. Gyn.," Jan., 1900; [21] "L'Obstetrique," March 15, 1900; [22] "Annali de ostetricia e ginecologia," 1889, p. 833; [23] "Northumberland and Durham Jour.," Dec. 28, 1899.

LACHRYMAL APPARATUS. *F. Richardson Cross, M.B., F.R.C.S.*

In chronic dacryocystitis Pergens.[1] Emmert[2] and Sydney Stephenson[3] have obtained good results by syringing the lachrymal sac with 10 per cent. solutions of **Protargol** in addition to the routine treatment. The latter surgeon has also tried similar applications of **Largin** in solutions of from 5 to 10 per cent., and considers that it exerts almost a specific effect against the products of suppuration.

Although the majority of cases of mucocele or dacryocystitis can be cured by repeated probing combined with syringing with water or some antiseptic solution, there remain a certain number in which the disease resists all such treatment. A very old method of dealing with such obstinate cases is the destruction of the lachrymal sac by means of caustics or the cautery, and it is also possible to dissect out this structure and obtain union of the skin wound by first intention.

Lawford,[4] Holmes,[5] and Aronis[6] have recently written on extirpation of the lachrymal sac. The paper of Aronis describes the method followed in the clinic of Kuhnt (Königsberg), who has performed the operation nine hundred times.

The authorities mentioned give lists of the indications for the operation, all of which are comprised in the following :—

(1,) When treatment by probing and syringing has been fully tried without success, or is impossible owing to the presence of an impermeable stricture or bony occlusion of the nasal duct.

(2,) When a rapid cure is indicated owing to (*a*,) The necessity of performing an operation for glaucoma or cataract; (*b*,) The presence of a serpiginous ulcer of the cornea, or a wound of the eyeball, either of which may be infected by the discharge from the lachrymal sac; (*c*,) The inability of the patient to submit to a prolonged course of treatment.

(3,) When chronic caries of the lachrymal bone or frontal processes is present as a complication.

Holmes recommends that when the sac is removed the lachrymal gland should also be excised, and says that an operation which only obliterates the canal without cutting off the annoying supply of tears which torments the patient for the rest of his life is to his mind a very incomplete piece of surgery. Lawford and Kuhnt, however, claim to have obtained good results by simple removal of the sac, and their experience agrees with that of other surgeons. As the lachrymal gland can, if necessary, be removed subsequently, most operators will probably prefer to confine themselves in the first instance to extirpation of the sac, which appears in some way to modify the secretion of tears as they rarely give any trouble after it.

The operation is performed by Lawford in the following manner :—

(1,) An oblique incision is made over the sac extending downwards and outwards for 2·5 centimètres from a point slightly above the internal palpebral ligament.

(2,) The wall of the sac is exposed by dissection, and commencing on the side next the bone, its lateral attachments are carefully freed, care being taken to avoid cutting into it.

(3,) The lower end of the sac where it passes into the nasal duct is cut across and its upper end is carefully dissected away.

(4,) The wound is cleansed and closed by sutures, a drain being inserted if there is much infiltration of the surrounding tissues.

Holmes operates in a similar manner but endeavours with a specially devised blunt hook to dissect the sac from beneath the tendo oculi without dividing the latter structure. In addition he curettes the bony canal so as to destroy its lining membrane, and cauterises each canaliculus.

In Kuhnt's operation, as described by Aronis, great stress is laid on the position of the first incision. The steps are as follows :—

(1,) An incision is made along the lachrymal ridge, not between the ridge and caruncle.

(2,) The fibrous capsule is divided along the ridge, and the inner surface of the sac is detached with closed scissors.

(3,) The upper part of the sac, together with its fibrous covering, is seized with toothed forceps and separated by cutting from above and a little outwards with scissors.

(4,) The other surfaces having been separated the sac is cut through at the top of the nasal duct, the mucous membrane of which is curetted.

(5,) The wound is closed in the ordinary manner.

In practice it will be found that the tissue of the sac is so friable as to be most difficult of dissection, requiring in most cases to be torn or scraped away piecemeal, but the operation should be planned on some such definite lines as those given above.

REFERENCES.—[1] Quoted in "Pract.," Nov. 1899; [2] quoted in "Lancet," Oct 14. 1899; [3] "Therapist," May 5, 1900; [4] "St. Thomas Hosp. Rep.," vol. xxvi.; [5] "Arch. of Ophthal.," vol. xxviii., Jan. 1899; [6] "Ann. d'Oculistique," March, 1899.

LARYNX (Diseases of). *W. Milligan, M.D.*

Laryngoscopy in Children.—To obtain a good view of the interior of a child's larynx is at all times difficult, and is frequently hardly possible. Even under an anæsthetic laryngoscopic examination is usually unsatisfactory. Escat[1] has devised a peculiar form of tongue depressor which is so curved as to adapt itself to the base of the tongue, the branches of the fork descending one upon either side of the epiglottis and lodging in the corresponding pyriform sinuses. By this means the tongue can be not only drawn forwards, but also depressed. The exact method of manipulation is seen in *Fig.* 14.

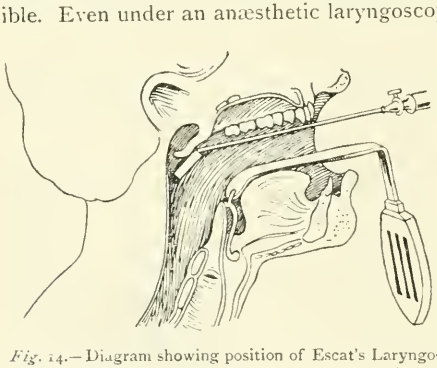

Fig. 14.—Diagram showing position of Escat's Laryngoscopic Tongue Depressor during forcible examination of larynx in children.

Another useful and practical method was recently brought before the Laryngological Society of London by Lack. The child to be examined is placed in the usual position for laryngoscopy, the

index finger of the left hand is passed well into the mouth, and the terminal phalanx hooked around the hyoid bone, which is then pulled forward. The rest of the finger acts as a tongue depressor, the knuckle as a gag, while the left thumb under the chin serves to steady the head. A small mirror is now introduced with the right hand, when the interior of the larynx can be easily seen.

Acute Catarrhal Laryngitis.—Lange uses the following solution with an atomiser :—

R Ichthyol	1 part	Distilled Water	9 parts

Pachydermoid Laryngitis.—Dundas Grant,[2] in a case of pachydermoid laryngitis occurring in an alcoholic, found benefit from the employment of topical applications of an alcoholic solution of **Salicylic Acid**, the strength of the solution being gradually increased.

Papillomata.—Rosenberg,[3] in an analysis of one hundred and ninety-six cases of laryngeal papillomata, found one hundred and eight cases amongst boys and eighty-eight cases amongst girls, in a proportion of about five to four. After an exhaustive and critical study of the best method of treatment, he sums up as follows: That, in the first place, intralaryngeal means should be tried so long as marked dyspnœa is absent; failing this, tracheotomy should be performed and intralaryngeal treatment resorted to again, and only in urgent and very severe cases should thyrotomy be resorted to. It is specially contraindicated in young children.

Tuberculosis.—Freudenthal,[4] in the dysphagia which at times accompanies laryngeal tuberculosis, employs **Orthoform**, which, he remarks, possesses two valuable properties : (1,) Its analgesic action ; (2,) Its freedom from toxicity. He finds it best to use it in the form of a 25 per cent. emulsion made with the yolk of an egg. It may be used as an insufflation when mixed with stearate of zinc.

Herzog[5] speaks highly of the value of **Sulpho-Ricinate of Phenol** in tubercular lesions of the larynx, the remedy stimulating the absorption of tubercular infiltrations and their products.

To relieve pain Kassel[6] employs an emulsion of orthoform containing 25 grammes of orthoform and 100 grammes of olive oil ; whilst to relieve cough, Donnellan recommends the following combination of drugs :—

R	Codeine Sulphate	grs. 3	Syr. Wild Cherry	fl. dr. 4
	Sodium Bromide	grs. 120	Water	ad oz. 2

Sig.—5j every four hours.

In a review of the treatment of two hundred cases of laryngeal tuberculosis, Lake[7] finds that in granular conditions of the vocal cords and in cases of superficial ulceration, intra-tracheal injections are most

efficacious. In cases of œdema, and in œdema with superficial ulceration, the topical application of **Lactic Acid, Formic Aldehyde,** or **Sulpho-Ricinate of Phenol** are useful. Where there is marked tubercu-

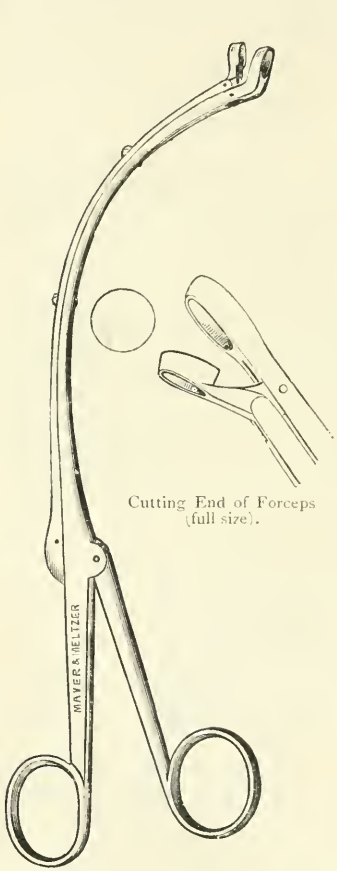

Fig. 15.—Cutting Forceps for rima glottidis.

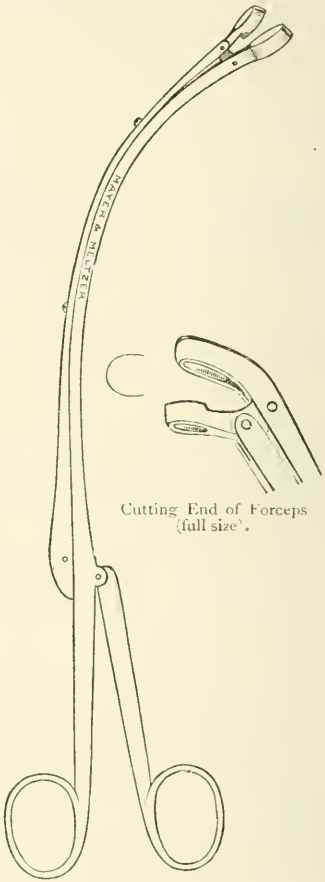

Fig. 16.—Cutting Forceps for cricoid plate.

lous infiltration of the parts, the infected tissue should be freely removed by means of cutting forceps. *Fig.* 15 shows a pattern of cutting forceps designed by the author for the removal of infected tissue in the

region of the rima glottidis, *e.g.*, the epiglottis, the arytenoid cartilages, interarytenoid fold, etc.; also the full size of the cutting end of the forceps. *Fig.* 16 shows a cutting forceps for infiltrated tissue in the region of the cricoid plate; also the full size of the cutting end of this forceps.

Where there is very extensive disease of the larynx, and where the condition of the patient contra-indicates active surgical interference, the following insufflation will be found useful :—

℞ Iodoform | Orthoform āā grs. x

Kassel recommends an emulsion of **Orthoform** made up of 25 parts of the drug and 100 parts of **Olive-oil**. He claims that the emulsion does not produce the disagreeable effects which follow the employment of cocaine, that it seldom causes dyspepsia, and that the anæsthesia is of long duration.

REFERENCES.—[1] "St. Louis Med. and Surg. Jour.," May, 1899; [2] "Jour. of Laryngol.," Sept., 1899; [3] Ibid., Jan., 1899; [4] "Laryngoscope," March, 1899; [5] Ibid., Dec., 1898; [6] "Merck's Archiv. of Mat. Med.," Feb., 1899; [7] "West London Med. Jour.," April, 1899; [8] "Brit. Med. Jour.," Feb., 1899.

LEPROSY. *T. Colcott Fox, M.B.*

Dr. Prince A. Morrow[1] discusses the preferential determination to certain regions of the cutaneous manifestations of leprosy. "They almost invariably make their first appearance upon the face, hands or feet, or about the ankles, and, while in the further evolution of the disease they may become generally distributed, yet these predilected localities continue to be the seat of the most active and characteristic changes." Morrow goes on to note the marked differences in the character and localisation of the cutaneous lesions of the two phases of leprosy. Thus for the most part the erythematous patches of tuberculated leprosy are transient and may recur several times before becoming infiltrated, whilst those of the anæsthetic phase are essentially permanent. The eruption of the tuberculated form prefers the anterior plane of the body, the patches of the anæsthetic form the posterior, although there is no limitation of either phase to one particular aspect. Thus in a tuberculated leper seats of predilection of the nodules will be seen to be the facial mask, the front of the ears, the dorsum of the forearms and hands, the antero-lateral aspect of the thighs, the front of the knees and legs, and the dorsal aspect of the feet, though some may exist over the trunk. In the anæsthetic phase, however, the earlier spots may appear on the face and front and sides of the ankle, but subsequently the eruption selects the

buttocks, the backs of the shoulders, and postero-lateral aspects of the body generally. The glans penis, the palms and soles, the neck especially, temples, and the scalp, are rarely involved.

REFERENCE.—[1] "Jour. Cut. and Gen.-Urin. Dis.," Jan., 1900.

LEUCORRHŒA. (See "Vagina.")

LIVER AND GALL BLADDER (Surgery of the).

Walter G. Spencer, M.S., M.B., F.R.C.S.

Ptosis of the Liver (See also "Med. Annual," 1897, p. 377).—Treves, in a clinical lecture,[1] describes fully the signs and treatment of this affection, including references to all published cases. There is a sinking down or dropping of the liver in the abdominal cavity for which "ptosis" is a better term than others, such as "wandering," "moveable," "floating," but "displacement." "dislocation." "prolapse," are applicable. With or without displacement of the main mass of the liver there is a tongue-like projection downwards of the right lobe, in front of the kidney towards the iliac fossa. This has been called the "floating," "appendicular," "linguiform," or "Reidel's" lobe. Ptosis of the liver was first noted by Cantani in 1865, but the chief knowledge of this and other visceral ptoses is due to Glénard,[2] who, following on his first paper, has collected eighty reported cases. The liver is chiefly held in position by the vena cava and by intra-abdominal tension, the ligaments appearing scarcely sufficient to support entirely an organ of such a weight. The vena cava being the fixed point on which the organ rotates, it is the anterior edge which comes to point downwards, whilst the upper or convex surface looks forward, and as the right lobe is heavier than the left, the former sinks whilst the latter, on the left side of the vena cava, remains in position. But not only is the right lobe tilted downwards and forwards, its edge is also thinned out and prolonged at the expense of the rest of the lobe. Thus it may undergo a partial constriction by fibrous thickening of the visceral peritoneum in a transverse line so as to appear pedunculated. The condition is seen nearly always in women; out of the eighty cases collected by Glénard only seven were men, and it appears to be due to a general relaxation of the abdominal tissues, such as leads to herniæ, etc. Treves considers that tight lacing of corsets is not a cause, as this constriction falls below the mass of the liver, and the furrows met with on the convex surface of the gland he holds, with Turner, to be congenital. In twenty-six out of Glénard's eighty cases there were evidences of liver disease, such as gallstone, cirrhosis and hypertrophy, in one case cancer, in another hyatid cyst. Of the seven males, one had cirrhosis, a second hyper-

trophy from malaria, and a third enlargement with ascites from heart disease. In fifty of the cases the liver seems to have been sound, but some of the patients had suffered from attacks of jaundice or colic. The special method of examination recommended by Glénard is that of grasping the patient's loin with the left hand, whilst the right hand pushes up the intestines. In this way the edge of the liver with the "floating lobe" is detected by the left thumb. A distended gall bladder and a floating kidney may co-exist, and the differential diagnosis is difficult to complete without an exploratory incision. The symptoms caused by ptosis of the liver are: dragging sensations, indigestion, or attacks of colic, jaundice from kinking of the bile-duct; also others of a neurasthenic nature. The treatment generally advisable is a well-fitting belt, combined with the relief of dyspepsia, constipation and other nervous symptoms. Surgical measures are advised only in extreme cases. An incision in the right linea semilunaris is made and the liver fixed in position by about ten sutures passed deeply through its substance so as to unite it to the abdominal wall. At the same time gallstones are removed. After operation the patient should lie in bed for a month or six weeks. More severe operations, such as the removal of the floating lobe, are not advisable.

Hepatic Abscess. — Malbot,[3] from his experience in Algeria with thirty-two cases of hepatic suppuration, regards pain in the hepatic region after sudden movement or muscular effort, also when brought on by succussion, as the chief sign. The attendant fever is of no special type and may be absent. He did not observe peritoneal friction, nor jaundice, nor pulsations of the liver, nor hypertrophy, but deformity of the organ as the abscess bulges. He regards any lowering factor as liable to lead to hepatic suppuration. The diagnosis is completed by puncture; then a free incision is made, and the liver pressed into the wound by the assistant compressing the patient's sides, for there are rarely adhesions. The cavity is washed out, and several large drain tubes inserted. Manson's method[4] is a much less severe operation and therefore more suitable for exhausted patients. It is recommended by Cantlie.[5] It consists in finding the abscess by an aspirator, then passing in a trocar and cannula, withdrawing the trocar, passing a tube into the cavity through the cannula, withdrawing the cannula, and connecting a length of tube to the drain so as to obtain a siphon action. Doubtless when the abscess is near the surface and the patient in fair condition, a free incision, wiping out of pus sloughs and insertion of tubes or gauze is valuable. But the continuous breaking down of the liver substance

with the discharge of pus coloured like raspberry jam or prune juice, is a bad sign.

Gummatous Tumours of the Liver. In recording three cases in which a tumour led to an exploratory operation, I pointed out[6] the value of the knowledge thus gained, as it allowed of **Iodide of Potassium** being freely administered. Parker,[7] in a similar way discovered a large gummatous mass which he partly removed, and afterwards treated by antisyphilitic remedies. At the Ipswich meeting of the British Medical Association, Betham Robinson[8] described a case where a large gummatous mass had obstructed the common bile duct. Another case lately under me had a gummatous mass uniting the kidney to the liver. For seven years the patient had had hæmaturia intermittently, so that seven years ago he was advised to have his bladder explored for a suspected villous tumour, but he declined. Later, he had signs of chronic intestinal obstruction and wasting. There was absolutely no history of syphilis. After scraping out much of the gummatous sloughs, the administration of iodide of potassium led to the patient's temporary improvement, but he ultimately died exhausted.

Gall-stones in Young Children.—Still[9] has a specially interesting paper, including references to published cases, showing that the occurrence in young children of gall-stones is by no means exceptional. It is a cause which must be taken into account in cases of colic with screaming fits and drawing up of the legs, also of jaundice. They are found in children dying of wasting diseases where probably inspissation of the bile and feeble muscular movements of the diaphragm dispose towards the formation of concretions. In some cases a gall-stone has formed behind a stricture of the common duct, of congenital or other origin. Some of the cases suggest the possibility of a successful surgical operation, and therefore a timely diagnosis is important.

A marked case of sixteen years' standing was relieved by Treves.[10] He did cholecystenterostomy on a girl of nineteen. For sixteen years she had been deeply jaundiced, had stools without bile, and the urine deeply bile-stained. Her face was swollen, expressionless, resembling myxœdema, and her intelligence very imperfect. She was subject to severe febrile attacks with vomiting, dyspepsia and constipation. At the operation the common duct was found to end in a nodule, with marked distension of the biliary system behind. The symptoms gradually disappeared after the operation.

Suture of the Common Bile Duct.—Great importance has been attached to an exact closure of the common bile duct, and when

possible this should be carried out, whether to repair rupture or after removal of a calculus, and for this purpose a hammer-like instrument is employed by Halsted for drawing forwards the wound whilst sutures are being inserted. But when this cannot be easily accomplished, recovery may quite well take place. Garrett[11] saw a case of rupture of the common duct in a man aged twenty-one, from falling across a beam. Following the accident there was tympanites and jaundice; then a collection of fluid in the right hypochondrium from which on the eleventh day 6 quarts of biliary fluid were withdrawn by an aspirator, 4 quarts on the fifteenth day, and a similar quantity on the eighteenth. On the twentieth day an incision was made, and bile escaped from the foramen of Winslow, whilst the gall bladder and cystic duct proved to be intact. As the rent could not be found a drainage tube was put in. The abdominal fistula gradually closed, and four months later the patient was soundly healed and in good health. Bland Sutton,[12] after describing in a paper a case of removal of a gall-stone impacted at the end of the common duct by an incision into the lumen of the duodenum (see Mayo Robson, "Medical Annual," 1900, p. 217), remarked in the course of the discussion, that he did not trouble to suture the bile duct after removal of a stone, but drained and found that the bile generally ceased to flow on the third day.

REFERENCES.—[1] "Lancet," 1900, i., p. 1339; [2] "Lyon Méd.," 1885-98, p. 540; [3] "Lancet," 1900, i., p. 556; [4] "Brit. Med. Jour.," 1892, i., p. 163; [5] "Internat. Text Book of Surgery," Art. "Tropical Surgery," vol. ii.; [6] "Brit. Med. Jour.," 1898, ii., 1686; [7] "Lancet," 1899, i., p. 301; [8] "Brit. Med. Jour.," ii., p. 323, 1900; [9] "Path. Soc. Trans.," 1899, p. 151; [10] "Practitioner," Jan., 1899; [11] "Ann. Surg.," Feb., 1900; [12] "Brit. Med. Jour.," 1900, vol. i., p. 1223.

LOCOMOTOR ATAXIA. *Græme M. Hammond, M.D., New York.*

In speaking of the treatment of tabes by **Co-ordinate Exercises,** Putnam[1] says several points should be strictly borne in mind: (1.) It is skill, not strength that it is sought to develop; (2.) It is necessary to begin with relatively elementary motions, such as drawing the legs up and down in bed, or moving the fingers from one spot to another. The patient should be called upon to perform them with promptness and accuracy and at the word of command; (3.) Dulness, monotony, and fatigue, on the one hand, and superficiality on the other, are the rocks to be avoided, both by the introduction of sufficient variety into the exercises, and by giving them something of the entertainment of games of skill; (4.) It is not well to let the patient get on without an instructor, using a prescribed set of exercises. The necessity for obedience to the word of command, which calls for close attention

and for movements which come to have something of the character of involuntary reflexes, is a great help in stimulating both the conscious and the sub-conscious attention and the power of instinctive control; (5.) Weak, anæmic patients, and those suffering constantly from pains and crises, those with atrophy, rupture of tendons, cardiopathy, aneurysm, obesity, arthritis, laxity of ligaments, or severe arthropathy, are not good subjects for this treatment.

Thelberg[2] reports a case in which the administration of **Spermine** had undoubted beneficial effects where other medication had failed. After six injections, incontinence of bladder and bowel and the ataxic pains had disappeared, and the general tone improved considerably. After 12 injections had been given, the ptosis and oculomotor symptoms disappeared. The spermine was given in 1 c.c. doses.

REFERENCES.—[1] "Med. Rec.," Sept. 15, 1900; [2] Ibid., June 2, 1900.

LOCOMOTOR ATAXIA (Eye Symptoms in).

F. Richardson Cross, M.B., F.R.C.S.

From a study of the clinical notes of thirty cases of locomotor ataxia Hawthorne[1] draws the following conclusions as to the value from a diagnostic point of view of the various ocular symptoms which may occur in the disease:—

(1,) An optic nerve atrophy, a paralysis of an ocular muscle, or an Argyll-Robertson pupil may exist as an isolated symptom of locomotor ataxia for a considerable period of time before the onset of the general disease; (2,) Any two or all of these phenomena may be associated without general symptoms, and the probability is then increased that the diseased process causing them is of the locomotor ataxia type; (3,) Any one of these symptoms or a combination of any two or of all of them may exist in conjunction with a greater or less degree of evidence of the spinal disease; (4,) Occasionally a case which commences with purely ocular symptoms may rapidly develop evidence of the presence of the spinal lesion of locomotor ataxia.

REFERENCE.—[1] "Brit. Med. Jour.," March 3, 1900.

LUMBAGO (False). *Herbert Wm. Allingham, F.R.C.S.*

E. H. Freeland[1] says that backache is frequently due to reflex irritation, having its origin in the rectum, and that even when it is associated with symptoms referable to the other pelvic organs, the bladder or the uterus, the rectum will not infrequently be found to be the organ primarily at fault.

But the chief cause of complaint, the ailment which worries the

patient to the exclusion of all others, and on which for the time being his whole mental energy is concentrated, is a dull, weary, aching pain over the sacrum, sometimes continuous, sometimes intermittent, which prevents him concentrating his mind on his work at a time when it is important that he should give it his best and undivided attention. If the trouble be taken to analyse the group of symptoms it will be found that the only truly objective sign in the whole lot is the passage of scybalous stools and viscid mucus. This sign is the keystone of the whole situation, and to his mind it is of no doubtful significance—its presence points unmistakably to chronic rectal catarrh.

Once the condition of affairs is diagnosed, however, the indications for treatment are self-evident. These obviously are: (1,) To remove the scybala; (2,) To secure an efficient and regular action of the bowels; (3,) To relieve the catarrh; and (4,) To improve the general health. For the relief of the catarrh there is no more satisfactory remedy than **Ichthyol** in doses of from 5 to 10 grains or more night and morning.

It relieves the congestion, improves the appetite, and stimulates peristalsis. **Quinine** in 2-grain doses will also in some cases be found beneficial. Theoretically, no doubt, bearing in mind the prime cause, a complete cessation from work and a change of scene and air would be indicated.

REFERENCE.—1 "Lancet," April 21, 1900.

LUPUS ERYTHEMATOSUS.

Synopsis.—(Vol. 1900, p. 332). Hebra moistens the parts very frequently with **Absolute Alcohol**, **Sulphuric Ether** and **Peppermint Water**, applied on **Brun's Wadding**. Brocq uses, R Acid Salicylic, 1; Acid Pyrogallic, 3; Collodii, 40 parts. Ehler uses **Robin's Pills**, 1 or 2 daily at meal times as follows: R Hydrarg. Chlorid. Corros., Sodii Chlorid, Vini Thebaici, āā grm. j; Micæ Panis, grms. 5; Glutenis, grms. 2·5; Glycerini, grms. 2·3. M. Ft. Pil. 100. Whitehouse gave **Iodoform**, 0·06 gr. in pill at each meal. Reichel cured four cases with **Quinine**. **Finsen's Phototherapy** gave excellent results in several cases.

MALARIA.

James Cantlie, M.B., F.R.C.S.

Experiments on Malaria.—Under the direction of Professor Grassi[1] experiments on malarial were conducted with a twofold object: (1,) To prove that malaria is due to infection by the bite of the anopheles and not to the action of the air of infected districts; (2,) To secure to the inhabitants of a malarious district protection from the bites of the anopheles. The experiments were conducted on inhabitants in the Roman Campagna. The first thing attempted was to cure any case of ague during the "dead season" of the anopheles, that is, between January and June. The second was to preserve the subjects from the

bites of anopheles by wire blinds to doors and windows. Of one hundred and four persons who were submitted to this experiment, three only, who had not been treated by quinine, developed fever; whereas all unprotected persons in the immediate neighbourhood contracted malarial ailments.

Professor Fermi and Dr. Lumbao[2] have made a large number of experiments of strongly smelling substances on the exposed parts of the body as a protection from infection by mosquito bites. The substances used were: animal fats; vegetable fats; essential oils (eucalyptus, mustard, etc.); powders and infusions of tobacco, camomile, onions, etc.; tar-water, eau-de-cologne, etc; acids, such as acetic, carbolic, etc. Combinations of these materials were also employed, and also extracts of animals, such as reptiles, amphibia and fishes which are not attacked by mosquitoes. The experiments were conducted in the Pontine marshes and in Sardinia. Few of these substances were found to afford any protection, and then only for one or two hours indoors and for a less time in the open air. Although several of the substances employed allowed the patient to drop off to sleep unmolested they afforded protection for a few hours only. Among the most useful were castor oil and vaseline, and a 2 per cent. solution of benzine aldehyde.

Dr. Mattei[3] in Catania experimented on four men who worked in the adjacent neighbourhood by shutting them up in a mosquito protected house during the evening and night. No quinine was taken, and although the place was infested with mosquitoes, and eminently malarious, none of the men so treated contracted malaria during the thirty-three days the experiment was conducted.

Dr. Manson,[4] C.M.G., F.R.S., describes the "*experimental proof of the mosquito-malarial theory*" in a couple of experiments which have excited considerable attention. A wooden hut constructed in England was shipped to Italy and erected in the Roman Campagna during the period of the year when malaria was most rife. Protection from mosquitoes was afforded by wire screens in doors and windows, and by mosquito nets round the beds. In this hut Drs. Low and Sambon and three other persons resided for four months; they went about freely during the day, taking care not to go out until after sunrise, and getting indoors before sunset. No quinine was taken by any of the party, and none of them had malarial fever. In their immediate neighbourhood unprotected persons suffered universally.

At Dr. Manson's suggestion also, anopheles mosquitoes which had fed on persons suffering from benign tertian fever were sent from Rome to London. In London two persons were bitten by these

mosquitoes, one of them being P. Thurburn Manson, M.B., London. Both got fever; the parasites were found in their blood, and both were speedily cured by quinine.

Dr. Manson sums up the indications afforded by these experiments in minimising malarial infection thus: (1.) Avoiding the neighbourhood of native houses—the perennial source of malarial parasites; (2.) The destruction, so far as practicable, of anopheles' breeding pools; (3.) Protection from mosquito bites.

R. Koch,[5] in the report of his expedition to the Dutch Indies (Java and Sumatra) states it as his opinion that the distribution of quinine to the population free of charge is a very judicious measure, and concludes that the diminution in cases of malaria in the Dutch Indies is due to the use of quinine. Koch experimentally attempted to convey malaria to orang-outangs and monkeys by injecting the blood of malarial patients into these animals, but without success; and he came to the conclusion that malaria is confined to the human subject. Finding that the inhabitants of a marshy district (Ambarawa) in Java were but slightly affected with malaria, Koch was of opinion that the general population having contracted the disease in youth became immune. To test this hypothesis Koch tested the blood of children and detected the malarial parasites in 9·2 per cent. in one village, and 22·8 per cent. in another. At Tosari (Java), a place reputed to be free of mosquitoes, no malarial parasites were found in the children, and only in those adults who had travelled in malarial-mosquito infected districts.

Malaria and Epilepsy.—Marandon de Montyel[6] has investigated the bearing of malaria in epileptics. In fourteen epileptic cases observed, malarial infection was followed by grave results. In some persons epilepsy which had been in abeyance for a long time revived, and in other instances epileptic attacks appeared only after malarial infection. Generally, the epileptic attacks appeared in the intervals of the malaria.

Blood Parasites in Non-malarial Fevers.—Dr. Von Tunzelmann[7] notifies a form of fever which he observed at Chefoo, China, and which is prevalent in many of the Chinese ports. The fever belongs to one of the undifferentiated fevers, and is called dengue in one place, aberrant typhoid fever in another. Dr. Von Tunzelmann describes a parasite in the blood. Blood films, prepared in the usual way, fixed by absolute alcohol, and stained with Neelsen's stain, for half an hour or more, "reveals in the films one or more patches of a typical fungus, with branch hyphæ laden with spores." The febrile disorders in persons infected with this parasite vary from a mild febricula to one

of great severity, lasting weeks. **Quinine** has been found absolutely useless, and **Methylene Blue**, 1 to 2 grains every two to six hours, gives the best results.

Malaria and Mosquitoes.—Bastianelli and Bignami,[8] in a paper read before the Tenth Italian Medical Congress, enter fully into the relation of malaria and mosquitoes. They show that all three species of malarial parasite adopt as their host the same species of mosquito, and that each species preserves intact during their cycle the distinguishing characters of their species. A single mosquito bite can infect man, and one infected mosquito can convey the disease to several persons. Two species of the parasite may develop in one and the same mosquito, and yet the two remain distinct, so that it is possible for a mosquito to convey a mixed infection, a form of fever by no means rare. The authors maintain that the energetic treatment with quinine from the commencement of the infection of the æstival fevers not only reduces the danger of relapses, but is important for general prophylaxis since the parasite by the administration of quinine can be prevented from developing into those forms which continue their life in the anopheles.

The Extermination of Anopheles.—Major Ronald Ross,[9] I.M.S. (Ret.), remarks that while it may be possible to diminish or even exterminate anopheles in places where their breeding pools are comparatively few, the task may be impossible or much more difficult where the breeding places are numerous. Ross suggests two methods of exterminating anopheles: one may be adopted when during the dry season the breeding places are reduced to a minimum, when the few pools may be dealt with; the second plan is by means of a culicicide, if such a thing exists. Ross speaks encouragingly of lime applied to the soil, as recommended by Dr. Grellet in "Brit. Med. Jour.," Dec. 9, 1899.

Prof. A. Celli[10] remarks that man is the temporary host, and the mosquito the definitive host of the malarial parasite. These parasites complete their asexual life and prepare their sexual forms in the human blood, while they complete the sexual cycle of life in the middle intestine of the mosquitoes. Irrigation may favour the development of malaria by favouring the existence of the larvæ of anopheles. Aboriculture of a malarious territory is favourable to the development of malaria, owing to the shade and protection trees afford to the mosquitoes. At the present day we know of no plant inimical to malaria. Fish-ponds of fresh or slightly salt water near the sea-coast are sources of malaria. Isolation of a person infected with malaria, the use of quinine, and the destruction of the sources

and carriers of infection, that is, of the malarial mosquito, are the prophylactics available for protection against the spread and infection of malaria. Celli advocates the wide distribution of the information obtained during recent years, so that the public may be educated in the mosquito, malarial theory, and in its practical applicability.

Dr. Andrew Duncan[11] compares the prophylactic action of other drugs than quinine upon malaria. **Arsenic** in the Congo Free State rendered every one immune who took it regularly. Of thirty-nine persons in Italy on whom arsenic was used as a prophylactic, all escaped malaria except three, in whom slight attacks only developed. In India no benefit was observed when native soldiers were given the drug. Narcotine, nim bark, berberis, kreat (a tincture of the kreat hulviva), and indergao were some of the drugs mentioned by Dr. Duncan, but no decisive prophylactic or remedial action could be claimed for them.

W. J. Buchanan,[12] Major I.M.S., as the result of observations made on the prophylactic issue of **Quinine** in Indian gaols, came to the conclusion that the prophylactic issue of the drug as a preventive of malarial fever is strongly to be recommended.

Dr. R. Fielding-Ould[13] objects to the term "prevention" of malaria by quinine. The alkaloids of cinchona do not *prevent* malaria, they only attack the parasites when they are in a certain stage of their development. A patient has not always young amœbulæ in his blood, yet he continues to take large doses of quinine, thereby often doing great damage to his digestion. He quotes Dr. Poole's remarks from experiences gained in the West African Frontier Force, who writes: "I am unable to satisfy myself that the advantage of quinine taken as a prophylactic outweighed the disadvantages of the dyspeptic symptoms produced by its prolonged use."

Dr. Fielding-Ould holds that except in cases of actual fever and on exceptional occasions, such as after great fatigue, or during a march, quinine should be avoided, and is useless as a rule, and often dangerous. He lays it down as a rule that a full dose of quinine (15 grains) should be given when the parasites are about to sporulate or are in their youngest phase as sporocytes. The only sure guide to the proper period of administration is obtainable by microscopic examination of the blood during fever.

Hæmoglobinuric Fever.—Dr. Carnac[14] asserts that blackwater fever had never been observed in a person absolutely free from malaria. Its appearance is always preceded by one or more attacks of fever, and blackwater fever itself constitutes only a more severe attack with the addition of a new symptom — hæmoglobinuria. Pathological

anatomy also supports the identity of origin of these two affections. Although the malarial hæmatozoon is not always found in persons suffering from hæmoglobinuria, the sufferers examined have taken quinine which has caused the disappearance of the parasite. Quinine intoxication with concomitant blackwater cannot be assigned to the drug but rather to the malaria for which the drug was taken. Dr. Carnac sums up his belief as follows: No specific bacillus has been found in blackwater fever patients; the prophylaxis of blackwater fever is the same as that of malaria; attacks of the disease are more serious in proportion to the frequency of their repetition.

Dr. E. Marchoux [15] remarks that hæmoglobinuria seldom shows itself when malaria is in the acute stage, but appears by preference at a time when only chronic intermittent fever is observed. Africa, where malaria rages with greatest virulence, is also the country in which hæmoglobinuria prevails. Blackwater fever, however, has been found in the Antilles, in Central America, in Mexico, in Guiana, in Brazil, in the Hebrides, in the islands of Polynesia, in Tonkin, in Cochin China, in Burmah, and in India. In Europe it has been met with in Sicily, in Italy, in Greece, on the banks of the Danube, and in the Caucasus. Quinine is not sufficient of itself to produce hæmoglobinuria; it is necessary that the patient should be the subject of lesions which favour the toxic action of the drug. The best prophylactic that can be employed to ward off hæmoglobinuria is the preventive use of **Quinine,** and the rational treatment of malarial attacks.

Treatment of Bilious Hæmoglobinuric Fever.—Dr. Paul Gouzien [16] recommends the use of large hypodermic injections of **Artificial Serum** and infusion of **Cassia Occidentalis** in the treatment of bilious hæmoglobinuric fever. Generally a dose of 100 to 200 grammes at a time of the artificial serum is sufficient, and Dr. Gouzien has never found more than four injections necessary. Enemata of the serum is also used with advantage. The infusion of cassia occidentalis in some cases acts almost at once, the urine clearing and becoming increased in quantity with sweating and copious stools. The following is the formula for the infusion recommended by Dr. Gouzien: Recently dried cassia occidentalis leaves, 15 grammes; infused in 950 grammes of water. Filter and add juice of one small native lemon, and syrup, 50 grammes. A wineglassful to be taken at short intervals to a total amount of 1 to 3 litres in the day.

Blackwater Fever in Trinidad.—Dr. R. C. Bennett [17] states that although blackwater fever was believed at one time not to exist in the West Indies, three cases have come under his observation in eighteen years; all three cases subsequently to 1898, and it would therefore

appear as though the disease had been recently imported. No case of blackwater fever occurred except in subjects of ordinary malarial fever.

Dr. David Kerr Cross [18] notifies the differences between blackwater fever and malaria : (1,) Natives of British Central Africa do not take blackwater fever ; (2,) Europeans rarely take blackwater fever until they have been a year or two in the country ; (3,) Many Europeans enjoy a complete immunity from the fever ; (4,) Persons who are subject to blackwater fever may have ordinary (malarial) fever, (5,) No European who is subject to blackwater fever ever acquires an immunity from it, while all acquire in degree a form of immunity from ordinary fever ; (6,) Even after the sufferer from blackwater fever has left the infected or endemic area where he acquired the disease. both the ordinary (malarial) and the blackwater form are apt to recur and to retain their characteristic symptoms ; (7,) Unlike other fevers it appears to resist quinine.

Blackwater fever in British Central Africa may be divided into the following varieties which may be termed : (1,) The paroxysmal form ; (2,) The regular form ; (3,) A typhoid form ; (4,) A suppressionary form.

There are three physical signs that are marked in blackwater fever : (1,) Black or blood-red urine ; (2,) The development of a yellow colouring matter which invades every tissue of the body ; (3,) An abnormal black colouring matter—melanin—floating in the blood plasma, or inside the affected red blood corpuscles.

The following should be laid down as axioms :—

(1,) If a man takes blackwater fever before he has been two years in the country he should be invalided home never to return.

(2,) If he has not taken blackwater fever during the first three years, he has demonstrated that his constitution has a resisting power against this pernicious fever, and that eventually his constitution will adapt itself to the diseases of the African continent.

(3,) No one should ever treat lightly any form of remittent fever which shows an abnormal temperature of whatever degree, which brings about brain sickness, which is not amenable to quinine, and which shows small parasites of crescent form. At any moment it may develop into a pernicious type of the most serious nature. The bowels, kidneys and skin, excretory organs, chills, should be watched with the greatest care. Let the patient avoid over-exertion, mental worry, fatigue, indigestible food, or any other thing that may upset the balance and tend to depress.

TREATMENT.— Dr. Cross remarks, "The literature on the treatment

of blackwater fever at the present time presents great differences of opinion amongst writers and physicians practising in the tropics. As I have already said, some regard **Quinine** as a specific, whilst very many others regard it as most prejudicial. Great authorities even assert that its administration is at the bottom of all our blackwater fever trouble. I do not believe this ; still, I can point, in my own experience, to cases where I think the administration of quinine has done harm, and there are many cases of this kind on record. Whenever a man is threatened with blackwater fever he should, on the appearance of the first symptoms, go to bed at once, keep the skin warm and moist, drink freely of a decoction made from one lemon, sliced, put on the fire in three breakfast cups of warm water, boiled for half-an-hour, strained and sweetened. Hot fomentations should every half hour be applied to the kidneys, liver and spleen. Milk diet should alone be partaken of. Quinine does at least no good, and may do much harm. I can point to a case where blackwater fever seemed to come on when the patient was cinchonised. In some cases quinine acts like glycerin, or chlorate of potash, and renders the hæmoglobin unstable. This, superadded to the toxin of the parasite, may bring about the serious blood destruction we have noted in this disease. I would say that in the cases of paroxysmal hæmoglobinuria due to quotidian or tertian fever, with parasites in the blood, the quinine salts should be given, but not otherwise.

"The vomiting will certainly be the first thing to call for treatment. It is a brain sickness. Put mustard on the epigastrium ; try 2 drops of **Liquor Arsenicalis** every hour ; even 4 or 5 minims of the **Vinum Ipecacuanha** or ¼ gr. of the powder. **Cocaine**, because of its local anæsthetic effect, may stop vomiting, but often, notwithstanding the brain symptoms, one will be driven to give ¼ gr. of **Morphia** hypodermically. When the brain is congested, or there is kidney trouble, it will not act well, and demands the very greatest of care. I see that certain writers on the bubonic plague find vomiting is controlled by a full dose of **Calomel** followed by **Sulphate of Magnesia.**

"The second thing demanding attention is the liver. Continue hot fomentations over this organ every half-hour, then purge freely. On the West Coast heroic doses of calomel are often given, say 10 to 20 grs. I usually give 5 grs. calomel and 15 grs. jalap. Some recommend **Croton Oil** by the mouth, and **Turpentine** with **Castor Oil** by the bowel. I have found the above calomel and jalap, followed in a few hours with an ounce of sulphate of magnesia, to be most effective ; it is a grateful drink to the patient, and brings about by osmosis

copious watery evacuations. The vomiting controlled, I usually give 3 tabloids of **Pigs' Bile** as prepared by Burroughs, Welcome & Co., every three hours. I believe the normal bile arrangement has been upset, and pigs' bile being allied to the human is an antiseptic to the poison invading the system. Or a pig may be killed and the bile given *per rectum*. I can point to several cases where it seemed to me to have a marked effect.

"Next, in order to help the kidney. I begin at once to give 10 drops of **Oleum Terebinthinæ** every three hours. This, in my opinion, acts marvellously. It should be continued till the urine is clear.

"After the first serious symptoms are past the danger is relapse. Insist on the patient keeping in bed for at least three weeks. The rest and warmth are equally necessary. Begin the following when the urine clears:—

℞	Quininæ Bisulph.	grs. 24	Potass Chlorat.	drops	2
	Ac. Sulph. Dil.	drops 2	Tinc. Ferri Perch.	,,	4
	Liq. Arsenicalis	,, 2	Aq. ad	oz.	12

Sig.—A tablespoonful in a wine glass of water three times a day after food.

"I see some French writers recommend the following: chloroform 6 drops, sweetened water 250 drops, powdered gum a sufficiency. Of this mixture they give a tablespoonful every ten minutes, until the patient becomes intoxicated. Then the effects are kept up by enemas of chloral. I have not tried this."

REFERENCES. [1] "Brit. Med. Jour.," p. 942, Sept. 29, 1900; [2] Ibid., p. 943, Sept. 29, 1900; [3] Ibid.; [4] Ibid., p. 949; [5] "Lancet," Feb. 24, 1900; [6] "Rev. de méd.," Dec. 10, 1899, quoted in "Brit. Med. Jour.," Feb. 10, 1900; [7] "Brit. Med. Jour.," March 31, 1900; [8] "Lancet," Jan. 13, 1900; [9] "Brit. Med. Jour.," Jan. 13, 1900; [10] Ibid., Feb. 10, 1900; [11] "Jour. Trop. Med.," Sept., 1900; [12] Ibid.; [13] Ibid.; [14] "Brit. Med. Jour." Epit., p. 39, Sept. 8, 1900; [15] Ibid. Epit, p. 40, Sept. 8, 1900; [1] Ibid.; [17] "Jour. Trop. Med.," Oct. 1900; [1] Ibid., May, 1900.

MEASLES.

Edwd. Wilberforce Goodall, M.D.

DIAGNOSIS.—In 1895, Filatow described certain white spots occurring on the buccal mucous membrane in measles, as being diagnostic of that disease. Koplik, of New York, in 1896 further investigated the frequency and character of these spots, and since then it has been the fashion to call them after his name. Other observers have written on the subject, of whom the latest is Falkener,[1] whose paper is very complete.

These spots consist of minute white specks, surrounded with a red areola They are found upon the buccal mucous membrane, often in

clusters opposite the bases of the lower or upper milk molars, or as a thin line opposite the junction of the upper and lower teeth when the jaw is closed. Sometimes they occur on the inner surface of the lower lip. They consist of fine papillæ, the summits of which become pulpy and white. According to Slawyk, these white summits when examined microscopically, consist of masses of epithelium undergoing fatty changes.

Filatow's spots can always be seen the day before the cutaneous eruption makes its appearance, in a few cases even two or three days earlier. They remain till the third day of the eruption, rarely later. They are diagnostic of measles ; and Falkener states that he never met with them in upwards of two thousand cases of diseases other than measles (rubella, scarlet fever, diphtheria, etc.).

As long as the spots are markedly discrete it is difficult to rub them off the mucous membranes. But they sometimes are so thickly clustered as to give the appearance of large spots, in which case friction will remove them. When confluent they are very much like, and may be mistaken for, the spots of aphthous stomatitis. On this point Falkener writes as follows : "Aphthæ are usually much more easily erased with the handle of a tea-spoon ; they often lack the red areola : some of them are generally too big, thereby casting doubt on the others ; they are generally too opaquely white for Filatow's spots ; and besides these points, ulceration is often present at the base of the spots." Falkener gives a bibliography of the condition up to 1899.

REFERENCE. — [1] "Ann. Report Stat. Com. Met. Asyl. - Board," for 1899.

MENINGITIS (in Children).

Synopsis.—(Vol. 1900, p. 358). In epidemic cerebro-spinal meningitis, inunction of **Ung. Credé**, 1 ounce daily for three days, and ½ ounce for each relapse. **Hot Water Applications** to spine for pain. Antiseptic cleansing of nasal cavities. Small doses of **Trional** for restlessness. **Lumbar Puncture** aids diagnosis of cerebro-spinal meningitis.

MENOPAUSE (The). (See "Menstruation.")

MENORRHAGIA AND METRORRHAGIA. (See "Menstruation.")

MENSTRUATION (Disorders of).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

Although all disorders of menstruation are symptomatic, it is convenient to review them together.

Amenorrhœa.—There are two varieties of this condition, viz., (1,) Primary amenorrhœa, in which the patient has never menstruated ; and (2,) Secondary amenorrhœa, in which the flow, after having started, is arrested from physiological or pathological causes.

Under the term "Primary Amenorrhœa," three conditions are commonly included, viz.: (*a*,) Delayed menstruation, in which the function is established late; (*b*,) Permanent amenorrhœa, in which, owing to under-development of the ovaries or uterus, menstruation never occurs; and (*c*,) Crypto-menorrhœa or concealed menstruation, where menstruation occurs but the products are retained owing to atresia of some part of the genital canal.

The last-named condition is not properly one of amenorrhœa, and is more correctly expressed by the term "Crypto-menorrhœa" (Sutton and Giles[1]).

The classification which I suggest is therefore as follows:—

A.—Amenorrhœa.

1.—Primary amenorrhœa.

(*a*,) Permanent amenorrhœa.

(*b*,) Delayed menstruation.

2.—Secondary amenorrhœa.

B.—Crypto-menorrhœa.

We will first consider the last-named condition. Of course a case of crypto-menorrhœa will necessarily appear to be one of delayed menstruation until the symptoms are recognised and an examination is made. Cullingworth[2] in an interesting account of five cases of retained menstrual products gives the symptoms that would lead to the suspicion that a case was of this kind. These symptoms are the occurrence, in a patient who has never menstruated, of periodical pains in and around the pelvis—the menstrual molimina as they are called—and the presence of a swelling in the lower part of the abdomen. When one or both of these symptoms are present in a girl at or beyond the age of puberty, it is reasonable to suspect that the menstrual blood is retained within the body owing to some obstruction in the passages. In such a case a local examination is imperative. The obstruction may be caused by imperforate hymen, by atresia of the vagina, or by atresia of the cervix uteri. The first of these is much the most common.

For an account of these cases, which all had features of interest, we must refer the reader to Cullingworth's paper.

Treatment.—Cullingworth dwells on the absolute importance of perfect asepsis in the operative treatment of these cases. The plan he recommends is to thoroughly disinfect the surface of the occluding membrane and the parts around, and then with a sterilised knife to make a free incision in the middle line in the axis of the vulvar opening. If the contents of the distended vagina do not escape freely,

the knife may be turned half round so as to separate the edges of the incision, or a cruciform incision may be made.

The contents should be allowed to flow out spontaneously, no pressure being made on the abdomen, and no irrigation being employed. With regard to the last point, in which Cullingworth's practice differs from that of many operators, he says: "My reasons for not irrigating are: (1,) That in using a douche there is always some risk of the injection of air and of the introduction of pathogenic germs; and (2,) That I do not believe it possible for any douche to cleanse all the remaining blood away, and that therefore I consider it best to let it drain away naturally into absorbent pads bound tightly over the vulva by a T bandage. There is no septic material in the cavity at the moment of evacuation, and I am very jealous of any manipulation which may be the means of introducing such material. Besides, there seems to me no indication for disinfecting the interior of a cavity known to be up to that moment aseptic. The one great aim should be to prevent the entrance into it of anything which could possibly contaminate it. I have never had cause to regret the non-employment of the douche."

The after-treatment consists in keeping the patient for some days in bed, insisting on the recumbent posture except during meals (when it is good for purposes of drainage that the patient should assume the sitting position) changing the absorbent pads as frequently as the amount of discharge requires and discontinuing them as soon as it ceases, instructing the nurse gently to draw asunder the edges of the incision if the discharge should suddenly and prematurely cease to flow, and at the end of a week, or as soon as the coloured discharge has entirely ceased, introducing a vaginal rest or dilator of glass or vulcanite, and securing it in position by a T-bandage, so as to allow the raw surfaces to heal without re-uniting, and to prevent adhesion of the vaginal walls.

Amenorrhœa.—Causes.—These are usually divided into local and constitutional. The local causes are absence or under-development of the uterus or ovaries. The constitutional causes, according to Edge[3] may be acute or chronic.

The *acute diseases* such as typhoid, scarlet fever, and arthritic rheumatism, cause amenorrhœa, and it often lasts for some months afterwards.

General chronic diseases acting thus are tuberculosis, diabetes insipidus and mellitus, exophthalmic goître, cachexia of syphilis and nephritis, chlorosis, myxœdema and cretinism. Acute mental depression and other psychoses cause amenorrhœa.

Byers[4] relates four cases of amenorrhœa associated with Raynaud's disease and pulmonary tuberculosis. Anæmia is, of course, the commonest of all causes of amenorrhœa, and is that referred to by Edge when he speaks of the numerous cases found among servant girls, especially those coming into the large towns from the country. Here cases are due to change of air, diet and habits, and to over-work in some cases. But the work is not so much to blame as is the want of oxygen and of something in the food to keep up the hæmoglobin. Constipation is a fairly constant factor and the use of strong tea another. Poisons like alcohol, and especially morphia, cause amenorrhœa, and must be enquired after in some cases.

Haultain[5] refers to another class of case, where ovaries and tubes are apparently normally developed, and no constitutional cause for the amenorrhœa is present. He thinks that the cause may lie in the central nervous system. Amenorrhœa due to pregnancy is, of course, another matter, which we are not here considering.

TREATMENT.—This generally consists in the treatment of the causative constitutional condition. In the case of amenorrhœa due to the atrophy of over-lactation, Edge says that weaning the child and rest with over-feeding are useful aids to the **Faradic Current**, which has its quickest results in such cases. **Electricity** has also been recommended in cases of under-development of the uterus; but we think it has here a very doubtful value.

Glynn[6] has recently advocated the use of **Thyroid Extract** as an emmenagogue. He has met with many cases of young girls, who through slight developmental changes had a temporary amenorrhœa, or a delay in menstruation. In such cases the administration of thyroid extract in doses of ½ gr. once a day, generally given at bedtime, proved sufficient to re-establish or start the function of menstruation.

In the discussion on Glynn's paper, Carter observed that the cases mentioned by Dr. Glynn were those of young people, and from the well-recognised influence of the thyroid secretion on developmental changes, he thought that its effect in such might be different from those in people of mature age; as it had been established by Chéron, and his results had been copied into the most recent books on therapeutics, that a marked effect of thyroid extract was to diminish and even check all forms of uterine hæmorrhage.

Menorrhagia and Metrorrhagia.—Bouilly[7] believes that metrorrhagia is due in some instances to cystic degeneration of the ovaries without accompanying salpingitis. The characteristic features of such hæmorrhage are that it appears first as an ordinary menorrhagia, but in

time the flow becomes inter-menstrual, and often continues throughout the month, until the resulting anæmia is extreme. The ordinary methods of treatment—hæmostatics, hot injections, intra-uterine applications, and tampons—have little or no effect. Curettement, though often repeated, does not check the flow, since it is not due to the ordinary hyperplastic endometritis. Since pain is frequently absent, the relation of the metrorrhagia to the ovaries may be entirely overlooked unless a careful examination is made, with the view of discovering moderate enlargement of these organs.

TREATMENT.—In speaking of the treatment of menorrhagia and metrorrhagia we do not of course contemplate that any case will be treated without an examination being made to ascertain its cause. Reports on the action of **Stypticin** continue to be published. Boldt[8] tells us that **Cotarnine Hydrochlorate**, discovered by Prof. Martin Freund, and named "Stypticin" by him because of its anti-hæmorrhagic powers, occurs as a yellow, odourless, microcrystalline powder, of an intensely bitter taste, and readily soluble in water. It is obtained from narcotine by oxidation with manganese dioxide and sulphuric acid, and is closely allied chemically, to hydrastinine. The latter fact, indeed, was the ground on which Freund based his belief regarding a similarity in therapeutic action between stypticin and hydrastinine.

Abegg[9] states that stypticin does not cause nausea or vomiting like ergot. It seems useless in a threatened abortion, and is purely a palliative in cases of bleeding fibroid or fibroid polypus, but it is very serviceable in menorrhagia at puberty and habitual menorrhagia in adult life. In metrorrhagia during the puerperium stypticin is of greater value, whilst it is especially efficacious in uterine hæmorrhages during the menopause.

Nassauer[10] finds, like Gottschalk,[11] that stypticin does not act upon the muscular structure of the uterus, like ergotine, but upon the vasomotor nerves of the genital tract. It is useful in all uterine hæmorrhages not accompanied by some gross lesion of the uterine mucous membrane, but it is of no use in fungous endometritis until curetting has been employed, or in hæmorrhage after labour or abortion until all remnants of the ovum have been removed. In bleeding due to myoma it is effective only when the mucous membrane is intact, although it strikingly mitigates the pains of the menstrual periods or does away with them altogether. It is efficient against hæmorrhages caused by tumours of the adnexa or by inflammation or congestion and against those of chlorosis and phthisis, as well as those of the climacteric. To secure its immediate action, 3 grains

should be injected deep into the gluteal muscles; internally 1 of Merck's tablets should be given every two hours, but not more than 8 in twenty-four hours. In painful and profuse menstruation, it allays the pain while it moderates the flow.

Boldt (*op. cit.*) presents a report based on his experience with the drug in sixty-seven cases. He summarises his results as follows:—

Uterine hæmorrhages, resulting from no demonstrable pathologic-anatomical condition, whether they occur in virgins or during the climacteric period, are favourably influenced; and so are hæmorrhages due to changes in the uterine mucosa, as well as those that persist after curetting has been performed. On the other hand, in cases where no scraping has been done, the remedy is of little or no use.

A satisfactory action may also be expected in hæmorrhages which, in consequence of inflammatory conditions in the pelvis, occur without any special pathological changes in the endometrium. On the other hand, hæmorrhages traceable to neoplasms within or around the uterus are not at all, or but very little, influenced.

As a local application for uterine hæmorrhage, Platon[12] has in two cases adopted with good results the plan of injecting **Peroxide of Hydrogen** (4 c.cm.) into the uterine cavity.

Dysmenorrhœa.—In cases of dysmenorrhœa occurring in young women who are not anæmic, and who consequently do not need iron, O'Donovan[13] speaks favourably of the value of the **Black Oxide of Manganese**, administered in the form of pills, each containing 2 grains.

The Menopause.—Among the most difficult things to treat may be considered the vasomotor disturbances and the nervous excitability incidental to the menopause. According to Kisch[14] excellent results are obtained from **Dietetic Treatment.** The quantity of food should be reduced to a minimum, all meat rich in extractives (kreatine and xanthine), nucleo-albumin or injurious products of metabolism, especially ptomaines, must be avoided. Thus boiled meat is preferable to roast or baked, and the flesh of young animals (veal and lamb) to that of old. Fresh fish is allowable. A mixed diet is most suitable, and should contain, compared with meat and fat, a large proportion of cereals, vegetables, and fruit, and practically no spices. From 35 to 53 ounces of pure water should be drunk daily, but no alcoholic liquors, especially if they contain a large amount of extract. Coffee and tea, if taken at all, should be much diluted. It is advisable to have four or five meals a day at regular intervals, so that but little is eaten at a time, the chief meal being between 1 and 2. In all cases it is necessary so to regulate the bowels that they do not

become confined; hence all foods such as milk and vegetables, which contain much water, are good, and all those containing much indigestible matter, such as leguminous vegetables and chestnuts, bad. Where the menses cease suddenly or at an early age, and the climacteric troubles therefore begin acutely, it is well to order a diet consisting entirely of milk, except for the mid-day meal, which may contain soup, roast white meat, young greens, and fruit. In most cases daily baths at 95° to 98·6° F., in which the patient remains for from ten to thirty minutes before bedtime are indicated; they prevent the tendency to sweating by stimulating the function of the skin, are a sedative to the nervous system, and often produce quiet sleep. Cold baths, on the other hand, are contra-indicated.

REFERENCES.—[1] "Sutton and Giles, Dis. of Wom.," 1st ed., pp. 71, 303; [2] "Brit. Med. Jour.," Jan. 13, 1900; [3] "Birm. Med. Rev.," May, 1900; [4] "Lancet," Aug. 26., 1899; [5] "Brit. Med. Jour.," Mar. 31, 1900; [6] Ibid., Apr. 14, 1900; [7] "La Gynécologie," June 15, 1899; [8] "New York Med. Monats," x., p. 602 (trans. in "Merck's Arch. of Mat. Med.," Feb., 1899); [9] "Cent. f. Gyn.," No. 44, 1899; [10] Ibid., Apr. 23, 1899; [11] "Therap. des Gegen.," Aug., 1899; [12] "Marseilles Méd.," Jan. 1, 1900; [13] "Jour. of Amer. Med. Assoc.," Dec. 31, 1898; [14] "Zeits. f. diät. u. phys. Therapie," vol. iii, part 8, 1900 (Abst. in "Brit. Med. Jour.," Mar. 24, 1900).

MIGRAINE.

Synopsis.—(Vol. 1900, pp. 361 and 11). **Antipyrine** given with **Soda Bicarbonate** or hypodermically or per rectum with **Laudanum, Caffeine** and **Sod. Benzoate**, āā grs. 4 repeated every two hours if required until four doses have been taken or the same dose hypodermically. Brunton combines 6 grains **Sod. Salicylate** with 10 grains **Pot. Brom.** In angiospastic Migraine, ℞ Methylene Blue (C.P.) grs. jss; Powdered Nutmeg, grs. jss; make one capsule. Sig.—1 four times a day. A combination of **Antipyrine, Caffeine,** and **Citric Acid** is often useful. For rheumatic or gouty patients avoidance of nitrogenous or indigestible vegetable food at night; in morning, glass of **Carlsbad Water** heated to 104° F. or **Vichy,** and at night the followiug pill: ℞ Ext. of Aconite, gr. ss; Ext. of Digitalis, grs. iij; Ext. of Colchicum, grs. iij-vj; Quinine Valerianate, grs. xv. Divide into 10 pills. **Salophen,** 15 grs. in cachet or in water repeated in an hour. **Apolysin** has given good results.

MILKER'S ERUPTION.

T. Colcott Fox, M.B.

Audry,[1] of Toulouse, has observed one case, and Winternitz,[2] of Prague, two cases of a peculiar affection in milkers, characterised by the formation of highly inflammatory nodules on the hands, and sometimes elsewhere. Winternitz cultivated a diplo-streptococcus which was not pathogenic in the rabbit or guinea-pig.

REFERENCES.—[1] "Ann. de Derm.," T. x, Nov., 1899, p. 972; [2] "Arch. f. Derm. u. Syph," Sept., 1899, p. 195.

MORPHINE HABIT. *Graeme M. Hammond, M.D., New York.*

Joffroy [1] points out the advisability of putting the patient in the best possible condition to tolerate the withdrawal of the drug. Habitués often take a much larger quantity of morphine than is necessary to satisfy their cravings, and the first step should be to ascertain the minimal dose which will prevent the physical symptoms of abstinence, particular attention being paid to the state of the heart and circulation, the alimentary tract, and the urinary organs. An important object is to place the organs, by which the drug is excreted, in as perfect working order as possible, giving **Tea**, **Coffee**, and moderate doses of **Spartein** to stimulate the functions of the kidneys, and using hydrotherapeutic measures to increase the activity of the skin. The patient should, of course, be placed under the best possible hygienic conditions. When this preparatory treatment is finished, he must then be isolated, so that it is impossible for him to obtain morphine. He believes the gradual reduction of the drug should only be practised in cases showing a marked morphine cachexia. The abrupt method should only be used when a physician is in constant attendance, and is mainly suitable in cases of short duration, or where the patient is young and free from cardiac or other visceral lesions. In most cases he prefers the intermediate method of Erlenmeyer, a rapid method but not abrupt. Each day half of the daily dose may be cut off. When the dose has become very small it may be discontinued altogether. In whatever way the deprivation is brought about the patient may be greatly relieved by counteracting the excessive acidity of the stomach. This hyperacidity is not improbably the cause of the vomiting, diarrhœa, insomnia, lumbar pains, etc. The desired object may be obtained by giving Vichy or other alkaline waters. If the pulse should become irregular and very weak morphine should be injected, but good feeding with coffee and milk, should be sufficient in most cases to prevent collapse. To lower blood tension and favour elimination, serum may be injected subcutaneously.

Macleod [2] recommends large doses of **Bromide of Sodium** in the treatment of morphine, chloral, and cocaine habits. The weight of the patient is ascertained, and, no organic disease contra-indicating, sodium bromide is to be given in two doses of 2 drachms in solution every two hours for two days, and 1 drachm during the third day. None is to be given after bedtime on the third day. Three ounces in all will usually suffice, but more may be given to induce deep sleep, which should last five or six days and nights. During this period nothing but milk is given. Twice a day, at least, the bladder and rectum should be evacuated. For a week or more following return to

consciousness, speech and locomotion, which are very much impaired or impossible on first awakening, gradually improve; the mental condition returns to a normal state more slowly. Delusions become less frequent and the memory improves. Solid food should be given as soon as asked for. Morphine may be given in the habitual dose the first day, halved the second, and very little or none on the third. Six weeks should be insisted on for convalescence. The cases cited show: (1,) The withdrawal of the drug within three days; (2,) Absence of suffering; (3,) Impossibility of deception on the part of the patient; (4,) No substitution habit results, and the patient loses his craving.

REFERENCES.—[1] "Brit. Med. Jour.," Feb. 10, 1900; [2] "Amer. Jour. Med. Sci.," Aug., 1899.

MYCOSIS FUNGOIDES. *T. Colcott Fox, M.B.*

Those interested in this formidable but uncommon disease should study the elaborate illustrated monograph by Max Wolters.[1] He cites the declaration of Besnier to the effect, that "In presence of a chronic ambiguous pruritic dermatosis, rebellious to ordinary treatment, which assumes the form of a vague erythrodermia, of a psoriasis, of an eczema, of a rebellious urticaria, of a lichenoid prurigo, etc., it is necessary to bear in mind the question of a possible mycosis fungoides."

The malady may commence by erythemata, vesicular, scaly or urticaria-like, or most often eczematous, eruptions. Then arise infiltrated plaques, scaly, humid or crusted, and with intolerable pruritus, and papular projections (lichenoid period of Bazin), and, finally, tumours of variable aspect and form grow mostly from pre-existing plaques. Ulceration, which may be profound, often arises from secondary infections. The lymphatic glands enlarge and subside in connection with the outbursts of lesions of the skin, and are only the result of a secondary infection, as in all pruritic dermatoses. The white corpuscles of the blood may be augmented in number. Eosinophilous blood cells have been found, but seem to be absent generally. In a minority of cases hypertrophy of the liver and spleen, bone lesions, gastro-intestinal troubles, intense fevers and sweats have been observed.

The pre-tumour, or pre-mycosic stage, as it is called, lasts generally two or three years, but thirty have been recorded. Death generally occurs from secondary intoxication, marasmus, and often some intercurrent attack as pneumonia. The total duration averages four or five years.

The cause is quite unknown in spite of all investigation. The

histology receives much attention. In all periods masses of round cells are found, sometimes in isolated areas, sometimes diffusely infiltrating the interstices of the connective tissue. The cells are small or voluminous. All have a nucleus rich in chromatin. They are to be regarded as lymphocytes. Larger plasma cells in variable quantity may be present. Mast cells also are seen in considerable proportion. Giant cells are certainly rare. The reticulum, to which great importance is attached in France, is formed by fibres of new formation, and the tumours are neoplasms. Mycosis fungoides, according to Wolters, represents a process of infiltration, which, commencing by œdema and dilatation of the lymphatic vessels, forms between the connective tissue bundles. As the process intensifies the vessels alter and degenerate, and a slight proliferation of connective tissue occurs, which may go on to form tumours. These, on involution, may have the skin intact, or under the influence of micro-organisms suppuration, necrosis and scarring may result.

Wolters rejects the idea of the malady being a cutaneous lymphadenosis, a sarcoma, or an infective granuloma. He regards it as a chronic general inflammatory malady of infective nature, which, localised at first in the skin, can invade also other systems.

The so-called mycosis fungoides d'emblée, lymphodermia perniciosa, pseudo-leucæmia and leucæmia of the skin are quite different affections.

Arsenic in some form seems to be the only therapeutic agent which affects the malady, and this only has a resolving action on the infiltrations, tumours, and glands.

The course is then slow but continually progressive, with more or less marked remissions, and alternations of amelioration and aggravation. Up to the tumour stage the health remains but little altered.

REFERENCE.—[1] "Biblio. Med.," 1899.

MYOIDEMA. (See "Phthisis.")

MYXŒDEMA. *Graeme M. Hammond, M.D., New York.*

The efficacy of **Thyroid Feeding** in this disease has been proved beyond the shadow of a doubt. The view that the symptoms are caused by an insufficiency of thyroid secretion is no longer a theory but is accepted as an established fact.

Gray[1] reports most gratifying results from the use of thyroid extract in a very severe case of myxœdema. When he first saw the case the head was greatly bloated, the scalp nearly hairless; the cheeks were heavy, pendulous, and pale. The ears were thickened, the eyes almost concealed by overhanging water-bags, the lips were

as thick as a negro's, and the nose was broad and thick. Almost the entire skin presented a shiny and pale appearance. The mind was sluggish and the speech slow and indistinct.

The abdomen was enormous, its walls being very thick and imparting a brawny feel to the fingers. The legs and feet were greatly swollen. The thyroid gland was not palpable, the trachea being felt through the thickened tissues. The patient was given desiccated thyroid gland in doses of 3 grains four times a day at first, and later reduced to three times a day. She also took a hæmatic, and occasional eliminants in the form of a mild chloride. At the end of three weeks the œdema of the abdomen and legs began to diminish. Improvement was gradual but progressive until every symptom of the disease had disappeared.

REFERENCE —[1] "Med. Rec.," Oct. 6, 1900.

NASAL CATARRH. (See "Coryza.")

NEPHRITIS (Surgical Treatment of). (See "Kidney.")

NERVOUS SYSTEM (Diseases of). (See also under the names of Special Diseases.) *Græme M. Hammond, M.D., New York.*

The Great Toe Reflex (Babinski's Symptom).—In 1896 Babinski called attention to a most important symptom which he had discovered and which he associated distinctively with disease of the central motor neuroses. He pointed out that while the normal plantar reflex consisted of flexion of the toes, if there was a lesion of the crossed pyramidal tracts, irritation of the plantar surface of the foot was invariably followed by extension of the great toe, and possibly of the other toes also. He also called attention to the value of this symptom in differentiating hysterical and other so-called functional neuroses from organic lesions involving the motor tracts. Since then this symptom has been carefully studied by numerous observers. The most important contributions are by Collier,[1] whose report is based upon the examination of five hundred cases; Walton and Paul,[2] who studied over seven hundred cases; and Fraenkel and Collins.[3] All observers are practically agreed upon one point, and substantiate the claim of Babinski, that when the symptom is present it invariably indicates an organic lesion of the central motor tracts. Walton and Paul believe that in 10 per cent. of all normal people the plantar reflex is absent. Knapp and Collins deny this, and claim that in such cases the plantar irritation was not applied sufficiently strong to bring out the normal reflex. The writer's observations incline him to believe with Walton that a few healthy people have no plantar reflex, but it is extremely doubtful if the proportion is as high as 10 per cent. With

this exception the deductions of Walton may be accepted. They are as follows:—

(1,) In health either of the following conditions may appear on taking the plantar reflex: (*a*,) Flexion of all toes; (*b*,) Flexion of some (generally outer) toes; (*c*,) Flexion of all toes on one side, and of some (generally outer) on the other; (*d*,) Entire absence of movement on both sides (about 10 per cent.); (*e*,) Flexion of all or of some (generally outer) toes on one side, with absence of movement on the other (at least 10 per cent.); (*f*,) Occasionally (in sensitive individuals) quick, semi-voluntary, indeterminate, movements, sometimes of flexion, sometimes of extension.

(2,) In early infancy no constant or characteristic movement of the toes appears, though extension is rather more frequent than flexion.

(3,) The Babinski reflex obtains in about 70 per cent. of hemiplegics and diplegics, and in approximately the same percentage of cases with disease involving the pyramidal tract in the spinal cord.

(4,) The Babinski reflex (*deliberate* and *constant* extension of the great toe, with or without extension and separation of other toes) is never present in health, and our observations lead us to doubt its existence in either functional or organic nervous or other disease not implicating the pyramidal tract.

(5,) This reflex is often the earliest to appear in pyramidal tract disease, *e.g.*, at the onset of a hemiplegic attack before the establishment of the exaggerated knee-jerk and ankle-clonus: it may persist during a period when other reflexes are absent, *e.g.*, when knee-jerk and ankle clonus are wanting on account of ankylosis, contracture and muscular wasting, as in long standing diplegia, or of degenerative sequences as in combined system disease. This reflex furnishes, therefore, a most important practical aid in diagnosis.

(6,) This reflex very exceptionally appears in cases not conforming to recognised types of pyramidal disease (meningitis, hydrocephalus, poisoning, as by alcohol or uræmia). These instances are too few materially to impair the diagnostic value of the phenomenon; in fact, the Babinski reflex alone should here rather lead us to suspect pyramidal involvement as by œdema or indirect pressure.

Spinal Cord Cocainisation.—In an interesting editorial in the "New York Medical Journal"[4] the subject of spinal cocainisation is discussed with fairness and impartiality. It is to be noted, in the first place, says the writer, that the attempt to produce analgesia by this method, is very apt to fail, and that when it is successful it is of very uncertain duration. It may last as long as five hours, but in one of Dudley's cases it endured for only thirty-two minutes and attention was called

to the difficulty of repeating an injection in such an operation as that of abdominal section.

As to the alleged safety of the procedure, even if no deaths had been rumoured to have followed it, our experience with it is far too small thus far to warrant the statement that it is absolutely safe. Grandin speaks of fatal results that had been reported in Paris at the time of the recent International Congress, and Goldan declares he has seen symptoms of cocaine poisoning in an obstetrical case. Dudley reports that the headache from it may be as severe as that which occurs after the use of a general anæsthetic, and Goldan says it occurred in half his cases, also that in a few of them there was rigidity of the muscles of the neck and back, which in one instance lasted a week. There are also retching and involuntary evacuation. Goldan, an anæsthetist of large experience, would restrict this method to cases unsuitable for the use of a general anæsthetic. With this restriction it may be tolerated; we are not denying the possibility that in rare instances it may be preferable to all other procedures, but we must repeat our expressions of apprehension of the probable effects of its general adoption.

In the cases which have come under the writer's observation the most curious condition was that while there was complete anæsthesia for pain and temperature, the sense of touch was almost, if not quite, perfectly preserved, the sensory symptoms corresponding accurately to those observed in syringomyelia. In the treatment of nervous diseases this method has no place and certainly cannot be recommended as a substitute for analgesics for the relief of pain.

The Neurone Doctrine.—One of the greatest advances made in neurological science is the evolution of the neurone. From the mass of facts relating to nerve cells, axis cylinders, and nerve fibres has arisen the doctrine of the nerve unit, no longer a theory, but an established truth. A clear conception of the science of neurology as it exists to-day cannot be held without an equally clear conception of the neurone and the part it plays in physiology and disease. There is not space enough at our disposal to spread the neurone doctrine before our readers, even in its most condensed form. The best and clearest exposition of this subject was presented by Barker, Spiller, Sachs, and Donaldson at the last meeting of the American Neurological Association. The neurone doctrine was considered from the following standpoints: (*a*) The anatomico-cytological relationship of the neurone to diseases of the nervous system (Barker); (*b*) The pathological changes in the neurone in nervous diseases (Spiller); (*c*) How does the neurone doctrine affect our conception of nervous diseases? (Sachs); (*d*) The functional significance of the size

and shape of the neurone (Donaldson). The entire series of these articles will be found in full in the "Transactions of the American Neurological Association" for 1900, and in the "Journ. of Nerv. and Ment. Dis." for September and October, 1900.

REFERENCES.—[1] "Brain," Spring, 1899; [2] "Trans. Amer. Neurol. Assoc.," 1900; [3] "New York Med. Jour.," Nov. 3, 1900; [4] Ibid.

NEURALGIA. (See also "Migraine.")

Synopsis.—(Vol. 1900, pp. 10, 11, 12). Methylene Blue is useful in functional neuralgias and all kinds of nervous headaches. Phenocoll Hydrochloride specially for cases brought on by cold. Salophen most useful in neuralgias of children.

NEURASTHENIA. *James Shaw, M.D.*

Gray's [1] treatment of neurasthenia is, to remove or minimise the cause, enjoin rest, give tonics, and apply electricity. The rest should be both physical and mental. From ten to twelve hours of rest in bed, out of the twenty-four, will usually suffice, but the patients, when they are up, should avoid fatigue. Where there is anæmia, **Iron, Quinine,** and **Strychnine,** conjoined with a large amount of meat and beef-tea and an abundance of fresh air, are the agents most generally useful. In the non-anæmic cases the best tonic is strychnine, from $\frac{1}{50}$ to $\frac{1}{30}$ of a grain, three times a day; in some milder cases moderate doses of Fowler's solution or of cinchona are useful. Colchicum is indicated in gouty cases. In those with lithæmia, Vichy or Giesshübler water is of value, and sometimes **Glycerophosphate of Lime** in doses of 5 to 10 grains, three times a day. If the neurasthenia be associated with marked dyspepsia, Weir Mitchell's treatment should be adopted. Mental diversion, adapted to the patient's strength, is highly important. Electricity is often of great value, about two milliampères of the **Galvanic Current** passed from the forehead to the nape of the neck for from two to five minutes daily, or a 5 to 10 milliampère current from the neck to the lower dorsal region for from five to ten minutes. General **Faradism** is often useful, and so is **Massage.**

Hesse,[2] in his paper on the therapeutics of **Bromipin** (Merck) quotes the observations of various physicians. Dornblüth found bromipin especially efficacious in relieving the nocturnal cardiac palpitation of neurasthenic patients, that very troublesome symptom ceasing with repeated doses of a teaspoonful of the 10 per cent. preparation at night, and sometimes permanently after a week's treatment. When the heart is so excitable that even the slightest impression, unexpected by the patient, produces long continued palpitation, Dornblüth gives a teaspoonful two or three times daily with equally satisfactory results, whereas, formerly he gave twice the quantity of bromine in the form

of bromine salts with only a temporary effect. In cases of neurasthenic anxiety he was highly satisfied with bromipin. Where the oily taste is objected to, the drug can be given stirred up with any liquid, flavoured with peppermint. It may also be administered in capsules, or subcutaneously, or by the rectum. (See "Epilepsy.")

REFERENCES.—[1] "Brit. Med. Jour.," Epit., April 28, 1900; [2] "Allg. Med. Centr. Zeit.," No. 21, 1900.

Græme M. Hammond, M.D., New York.

McGrew[1] classifies his cases under three heads: (1,) Developmental neurasthenia; (2,) Over-stimulation neurasthenia; (3,) A combination of both of the others.

The developmental neurasthenia needs such exercise (not rest) as shall tend to harmoniously develop and strengthen every part of the physical organisation, change of diet and surroundings, combined with stimulating and eliminating hydrotherapeutic measures, and massage. The over-stimulation neurasthenic will be best benefited by rest. Dieting, general massage combined with passive movements, special abdominal massage, hot fomentations along the spine and over the stomach and liver, saline sponging, and general faradism are measures promoting the elimination of fatigue and waste products, and increase the general muscular and arterial tone. In neurasthenia in which the developmental and over-stimulation elements are both combined, it is a delicate matter to determine how much is due to insufficient nervous vitality, and how much to the abuse of what vitality there is. For the purpose of treatment an approximate estimate must be made, and a course plotted accordingly.

REFERENCE.—[1] "New York Med. Jour.," June 16, 1900.

NEURITIS MULTIPLE (Malarial).

Synopsis.—(Vol. 1900, p. 362). Quinine is more or less a specific.

NIGHT TERRORS. *Henry Dwight Chapin, M.D., New York.*

Dr. Rey[1] found that adenoid vegetations were present in thirty-two cases of night terrors. After removal, the terrors subsided. He believes that the production of carbonic acid poisoning, induced by interference with respiration, renders the adenoids responsible for the trouble.

Dr. E. G. Little[2] reaches the following conclusions as to the causation of night terrors:—

(1,) Night terrors are in the great majority of cases caused by disorders productive of moderate but prolonged dyspnœa.

(2,) A preponderating number of cases are found in rheumatic subjects with early heart disease.

(3,) A considerable proportion of cases are due to obstruction of nasal cavities and fauces.

(4,) Digestive disturbances do not play the important part in causation that is often assigned to them.

(5,) The evidence for their casual connection with epilepsy or allied neuroses is scanty.

(6,) The attacks occur in the subconscious stage of early sleep, and are confined to young children under puberty.

Dr. L. Guthrie[3] gives the following as a summary of argument in reference to night terrors :—

(1,) Night terrors are always to be regarded as evidence of ill-health.

(2,) They may for convenience be divided into those of symptomatic and idiopathic origin. But *per se* the symptoms of the two cannot be distinguished.

(3,) Hallucinations of vision are usually due to febrile disturbance.

(4,) The content of the dream may, in some cases, throw light on its cause.

(5,) The character of the dreamer is of more importance than that of the dream.

(6,) In simple cases, simple treatment based on the cause suffices.

In idiopathic cases, not only local causes of irritation, but the environment and nature of the patient have to be considered.

REFERENCES.—[1] "Arch. f. Kinderh.," Band xxv, Heft 3. p. 4 ; [2] "Brit. Med. Jour.," Aug. 19, 1899 ; [3] "Clin. Jour.," June 7, 1899.

NOSE (Diseases of). (See also "Adenoids," "Coryza," "Epistaxis," "Hay-Fever," "Ozæna," "Rhinitis.") *W. Milligan, M.D.*

Frontal Sinusitis.—In acute frontal sinusitis Swain[1] advises the use of **Hot Saline Douches** to reduce the congestion of the turbinated bodies followed by an intra-nasal **Spray of Cocaine** or of **Supra-renal Extract.** If any granulations obstruct the infundibular orifice, they must be removed by the sharp spoon so as to favour free drainage.

Spiess[2] considers that certain subjective symptoms may be suggestive of frontal sinus suppuration, but cannot be absolutely relied upon. The methods by means of which a diagnosis may be made are : (1,) The examination of the nose : (2,) Exploratory syringing through the nasal opening of the sinus : (3,) Exploratory puncture from the interior of the nose.

This last method he conducts by the aid of the X-rays. A drill of about 3 mm. in thickness is used, worked by an electro-motor. After

thorough application of cocaine the drill is introduced into the nose, and its direction and position are verified upon the Röntgen screen. He considers that puncture of the floor of the sinus, executed as above, can be done easily, quickly, and with absolute certainty, and that before resorting to external operation this method should always be adopted.

Frontal Sinus Suppuration.—In order to cleanse the infundibular tract Lennox Browne has devised a useful director (*Fig.* 17), which combines the advantages of a probe, a curette and a bodkin in one,

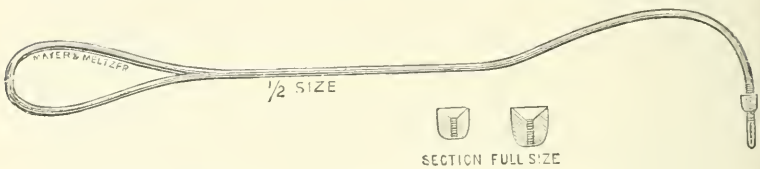

Fig. 17.—Lennox Browne's Infundibulum Probe, Curette and Bodkin.

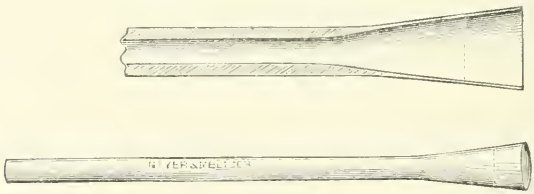

Fig. 18.

and in order to maintain efficient drainage from the sinus the author has designed an improved drainage tube (*Fig.* 18) in which the walls of the funnel B are made somewhat thinner than the walls of the tube proper.

Maxillary Antral Suppuration.—In the diagnosis and also in the treatment of antral suppuration Réthi[3] advocates the use of the negative air-douche. After all secretion has been cleared away, and after cocaine has been applied to the neighbourhood of the hiatus, a Politzer's bag is compressed and its nozzle introduced into the affected nasal chamber. Both nostrils are now firmly closed, and as the patient swallows, the bag which has been held compressed is allowed to expand suddenly. If secretion is present in any of the cavities it is sucked out, and the seat of the disease thus revealed.

Maxillary Antrum.—Herzfeld[4] recommends plugs of pure rubber for insertion into openings made into the maxillary antrum either

through the alveolus or through the canine fossa. The plugs are made of a somewhat conical shape, and to the base a flange of thin sheet rubber is attached which prevents the plug from slipping into the cavity.

Hypertrophy of the Inferior Turbinated Bone.—Harrison Griffin[1] in cases of nasal obstruction where the inferior turbinated body is found to lie close to the septum after the mucosa has been thoroughly cocainised, recommends removal of a portion of the over-grown bone by means of a nasal saw. The nasal passages are first cleansed by means of an alkaline antiseptic solution and then the mucosa covering the inferior turbinated body sprayed with a 2 per cent. solution of cocaine, and a few moments later with a 20 per cent. solution. A small nasal saw is now introduced under the turbinated bone and made to cut upwards and inwards towards the septum.

Antral Suppuration.—J. G. Turner[6] in dealing with the value of transillumination as an aid to diagnosis suggests that the two sides of the face should be compared as to (1,) Illumination of the pupils; (2,) Appreciation of light by the patient; (3,) The light along the lower border of the orbit; and (4,) The light coming through the cheek. In the way of treatment he recommends an opening being made through the canine fossa.

Chronic Muco-purulent Catarrh of the Antrum of Highmore simulating Post-Nasal Catarrh.—Brady[7] calls attention to a form of muco-purulent catarrh of Highmore's antrum which he says is frequently mistaken for post-nasal catarrh. Its distinguishing clinical feature is that the discharge is never seen by anterior rhinoscopy, but by the use of the post-nasal mirror is seen issuing in a thin narrow streak below the posterior end of the middle turbinal upon one side. To effectually treat this condition, opening of the antrum through the canine fossa and curettage are recommended.

Sphenoidal Sinus.—Cordes[8] in order to get a view of the anterior wall of the sphenoidal sinus recommends Choelwa's plan, viz., a slender elevator is introduced between the middle turbinal and the septum, and the former is pressed outwards and fractured (probably along its base of attachment). Should this procedure not give sufficient access to the part the whole or a portion of the middle turbinal may be removed by means of snare or forceps.

REFERENCES. — [1] "Laryngoscope," Feb., 1899: [2] "Brit. Med. Jour.," Oct., 1899; [3] "Jour. of Laryngol," Jan., 1900; [4] Ibid., Nov., 1898; [5] "New York Med. Jour.," Feb. 29, 1900; [6] "Lancet," Mar., 1900; [7] "Jour. of Laryngol," Nov., 1899; [8] Ibid, Apr., 1900.

ŒDEMA (Angio-neurotic). *T. Colcott Fox, M.B.*

This somewhat uncommon, and interesting condition, which probably comes under the notice of most practitioners at one time or another, consists in the evolution of large tumour-like swellings and infiltrations in the skin, of a temporary character, and due to œdema, but necessarily of more prolonged duration than the more superficial and smaller urticarial wheal. In these "massive or giant wheals" the over-lying skin may be reddened, or unaltered, and rarely presents the characteristic aspect of urtication. The affection as a whole may be chronic or recurrent.

It is evidently a disease of neurotic subjects, and the proximate and remote cause are very similar to those acting in urticaria, with which affection angio-neurotic œdema is closely allied. The circumscribed, though often large and massive, character of the swelling will serve to distinguish the affection from mechanical œdema, dropsy, and myxœdema. Erythema nodosum has a special distribution and course. Insect bites must be kept in mind. In the "white œdema" of hysteria the swellings are diffuse and the general symptoms will attract attention. "Blue œdema" is now known to be generally associated with organic diseases such as syringomyelia, and is confined to the extremity of one limb.

Onuf records seven cases, and thinks that the predisposing causes of this vaso-motor neurosis are acquired or inherited neuropathic "tares," manifesting themselves especially by visceral nervous disturbances. These can be brought about by alcoholism. The determining causes are often fatigue or emotions. Baruch also records four cases, two of which were relieved by a purgative which occasioned fœtid evacuations. Wende observed hæmoglobinuria as a complication.

REFERENCES.—[1] Onufrowicz, and also Baruch, "Med. Rec.," N.Y., Aug. 5, 1899, p. 183, and Aug. 19, 1899, p. 247; [2] Wende, "Jour. Cut. and Gen-Urin. Dis.," Apr., 1900, p. 178.

OVARY (Diseases of). *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

Hernia of the Ovary.—A good summary of this condition is given by Browne[1] who records two cases. He also gives a very full bibliography. The hernia may be congenital or acquired. The congenital form is almost invariably associated with and caused by some arrest of development during intra-uterine life; it is always inguinal, often double, but when single generally on the left side. It is caused by abnormal descent of the ovaries analogous to the normal descent of the testicles, constituting anomalies rather than diseases, and coinciding usually with other anomalies of the genitals, such as

embryonic uterus, uterus unicornis, hermaphroditism, etc. The persistence of Nuck's canal favours the production of congenital hernia of the ovary and so do the size and shape of the ovary, which is at first a long, flat body with its apex pointing towards the canal: another favouring cause is the fact that at the birth of the child the ovaries are yet situated above the ileo-pectineal line, and during the first few months descend into the true pelvis. Since congenital hernia occurs so frequently as a result of arrest of development, and borders so closely on pseudo-hermaphroditism, it is important in all cases that the glands, when removed, should be examined microscopically (in Chambers's case the herniated "ovaries" proved to be testicles). The sac in this form of hernia generally contains the ovary and Fallopian tube. It is irreducible, except soon after birth, on account of the adhesions formed and the early closure of the internal ring. Accidental or acquired hernia of the ovary may occur at any of the ordinary terminal openings, in which case it frequently follows a pre-existing intestinal or omental hernia. It is almost always unilateral and more frequent on the right side. It is most apt to occur soon after labour when the abdominal walls are relaxed and the uterus and ovaries lie above the pelvic brim. On that account women who suffer from any form of hernia should be carefully watched before, during, and after their confinements, so as to prevent and rectify any undue strain upon the weak point.

Ovarian Calculus.—Coe[2] showed before the New York Obstetrical Society a calculous concretion, removed from the ovary of a patient aged forty-one. She had been twice married and was childless. The history was that she had suffered from an attack of peritonitis nearly a year before operation, and a second six months after the first. The first attack was diagnosed as appendicitis ; the patient suffered from more or less constant pain in the hypogastrium, chiefly to the left. The most marked symptom, however, was intractable sciatica on the left side.

Tuberculosis of the Ovary.—Primary tuberculosis of the ovary is very rare ; and Loeffler,[3] who records a case, believes that only one genuine case, that of Franqué, has been previously described. In Franqué's case, a woman, aged forty, had a tumour the size of a fist to the left of Douglas's pouch. Besides this nothing pathological was found in the lungs or elsewhere. At the operation the outer end of the Fallopian tube was found to be thickened and adherent to the enlarged ovary. Microscopically, typical tubercle and tubercle bacilli were found in the ovary. They were also present on the serous surface and in the subserous cellular tissue round the

outer end of the Fallopian tube, and also in the thickened meso-salpinx.

Lœffler's case was that of a girl, aged nineteen, who died of what was diagnosed as tuberculous peritonitis. *Post mortem* a large quantity of fibrino-purulent exudation was present in the peritoneal cavity, the peritoneum was covered with grey miliary tubercles and the intestinal coils were matted together by recent adhesions. The genital organs were of an infantile type, and, except for the ovaries, healthy. Both ovaries contained caseating nodules of tubercle. There were a few calcified subpleural lymphatic glands containing tubercle bacilli, and on the surface of the liver there was a caseous tuberculous nodule. All the other organs, including the lungs, Fallopian tubes and intestines, were healthy. The reason for supposing the primary focus to have been in the ovaries was that the peritonitis was evidently more recent than the other lesions, of which the ovarian were the most marked.

This view was supported also by the fact that the virus had spread from the ovaries through the lymphatics, and had implicated the liver and subpleural glands on its way to the thoracic duct. Since the girl was a virgin the primary disease must have had a hæmatogenous origin. Franqué believed that in his case the virus must have entered some catarrhal lesion of the vagina or uterus and been conducted to the ovary by the lymphatics, since if it had passed directly through the genital canal the peritoneum would have been involved before the ovary. The husband in this case was tuberculous.

Ovarian Tumours.—With regard to the origin of ovarian dermoids and teratomata, Kroemer[4] endorses Pfannenstiel's view that these tumours are ovulogenous, since they always present evidences of the three embryonic layers. The ultimate cause of their development is still unknown, but it may be assumed that their manner of development is not one of parthenogenesis, since the latter is a physiological process. The cleavage of the ovum from which a dermoid develops is pathological. Only the earliest portions of the embryo develop, hence the prominence of the ectoderm and cephalic end, while the remaining portions either do not develop at all or are deformed. The differentiation is one-sided, and is sometimes confined to a single organ, such as a breast.

Among the complications of ovarian tumours, two receive illustration from cases reported by Cullingworth[5] and Malcolm[6]. Cullingworth relates five cases of acute twisting of the pedicle in cases of unsuspected ovarian cyst. The symptoms to which this accident gives

rise, when the twist occurs suddenly, are severe and not seldom alarming. They consist of sudden and severe abdominal pain, followed by increase in the size of the abdomen and such extreme tenderness as almost invariably to give rise to the suspicion of general peritonitis. These symptoms are accompanied by vomiting, and a greater or less degree of collapse. The surface is cold and moist, the features are pinched, the face is anxious, the urine scanty, the pulse small, feeble and rapid, and the temperature is usually at first subnormal. When this series of phenomena occurs in a patient known to have an abdominal tumour the diagnosis is comparatively easy. But when, as often happens, the existence of a tumour has not previously been suspected the case is far otherwise, for the symptoms so closely simulate those of acute intestinal obstruction that the most careful investigation of the physical signs is necessary in order to avoid error. A further difficulty in diagnosis occurs when the accident happens during pregnancy or parturition. In pregnancy the abdomen is already occupied by a tumour, consisting of the enlarged uterus, which is apt to mask the existence of a second tumour, and the symptoms are therefore much in danger of being misunderstood. The conditions are at least equally misleading when the accident occurs during or soon after delivery. Here, too, there already exists a tumour consisting of the recently emptied uterus, and the enlargement and tenderness are in danger of being ascribed to an accident to the uterus itself or to puerperal peritonitis.

In one of Cullingworth's cases the twist was not one of the pedicle, but of the tumour itself, one part of which had twisted on the other. Two of the cases occurred during pregnancy, and a third a few days after confinement. He points out that acute axial rotation is shown by experience to be particularly liable to occur during pregnancy and parturition. Out of fifty-seven cases collected by Mr. Knowsley Thornton, no fewer than fourteen, or one-fourth of the whole number, were associated with pregnancy.

Acute twisting of the pedicle may destroy life in one of several different ways. The fatal event may be the result either of hæmorrhage, of peritonitis, of intestinal paralysis, of septicæmia, or of exhaustion from prolonged suppuration.

With regard to treatment, there is but one method by which we may hope to save the patient's life, namely, operation; and when once the diagnosis has been established the operation should be performed with as little delay as possible.

Malcolm calls attention to the association of malignant disease with

ovarian tumours, and reports sixteen cases. The two points that his consideration of these cases leads him to emphasise are that ovarian tumours are malignant in a considerable number of cases, and that the gradations from innocent to malignant tumours are so insensible that it is not always easy, and perhaps not always possible, to separate them definitely.

Further, of all the arguments in favour of early operation the possibility that the tumour may be malignant, or that it may become malignant, seems to him to be the most forcible and urgent and at the same time the least considered.

REFERENCES.—[1] "Trans. Amer. Gyn. Soc.," vol. xxiii. for 1898: Abst. in "Brit. Med. Jour.," Feb. 11, 1899; [2] "Amer. Gyn. and Obst. Jour.," Aug., 1899; [3] "Wien. med. Woch.," Aug. 26, 1899; [4] Abs. in "Amer. Jour. Med. Sci.," Aug., 1899; [5] "Practitioner," April, 1900; [6] "Lancet," June 17, 1899.

OZÆNA. (See "Rhinitis.")

PANCREAS (Surgery of the).

Walter G. Spencer, M.S., M.B., F.R.C.S.

Mayo Robson, at the Paris International Medical Congress,[1] made an important contribution, he having operated upon forty cases of pancreatic disease. He had reached the termination of the pancreatic duct by an incision through the second part of the duodenum. In fifteen cases of tumour of the pancreas operated upon for the relief of symptoms, cholecystenterostomy or cholecystotomy was done. In some of these cases which had been diagnosed as cancer, the favourable result showed that the disease had been chronic interstitial pancreatitis. In young and middle-aged persons, this condition may be suspected, since cancer generally occurs after forty, and although in cancer not much good can be done, in chronic interstitial pancreatitis, cholecystenterostomy may completely relieve symptoms and lead to recovery. He had operated upon five pancreatic cysts for which the routine operation was incision and drainage, but in one case the cyst was easily and successfully enucleated. Acute pancreatitis, including hæmorrhagic and gangrenous pancreatitis was, without doubt, due to bacterial infection. An abscess should be drained as early as possible, preferably through an opening in the loin. In some cases an exploratory anterior incision was necessary, but if there was marked distension, the incision was more safely made in the left costo-vertebral angle, by which the lesser peritoneal sac was reached.

Chronic pancreatitis tended to produce obstructive jaundice, with

wasting, paroxysmal attacks of pain and ague-like seizures. It often occurred secondary to gall-stones in the common duct, so that the symptoms persisted after the removal of the gall-stones, and might set up suppurative cholangitis. Of the above-mentioned fifteen cases, one died owing to the operation being too late, and simple cirrhosis of the head of the pancreas was found. Another case improved after cholecystenterostomy, but there took place a recurrence of the trouble owing to closure of the opening, followed by death, three months after the operation, when the necropsy showed chronic interstitial pancreatitis and not cancer. Pancreatic calculi were comparatively rare, and to be recognised only by the pancreatitis, obstruction of the common bile duct and the suppurative cholangitis which they set up.

Ceccherelli concluded that emaciation, fat in the fæces, sugar in the urine, bronzed skin, jaundice and pain were met with in most pancreatic affections.

Pancreatic Cyst associated with Gall-stones.—Barling[2] had a case of pancreatic cyst associated with gall-stones. He first of all removed the gall-stones, and six months later, when the cyst had much increased it was successfully drained.

Pancreatic Suppuration.—Guinard[3] incised the epigastric region in a woman who had a fluctuating swelling in the epigastric region, with fever. The lower border of the liver was found adherent to the anterior surface of the stomach. On tearing through this a large sac was entered containing brownish pus and sloughs. The patient recovered with a fistula, from which flowed a small amount of pancreatic fluid.

Rasumvosky[4] had an acute case in a man aged twenty-nine. The symptoms followed on a drinking bout, and resembled a gastric perforation. An abscess formed under the left lobe of the liver which had the pancreas for its floor, and from which escaped blood clot and pancreatic sloughs. The fistula closed after five weeks. Brentano[5] saw a pancreatic abscess following the perforation of a gastric ulcer, in which the patient had glycosuria which served as the distinguishing feature.

Israel[6] also describes cases of abscess and cyst connected with the pancreas treated by incision and drainage.

REFERENCES.—[1] "Lancet," 1900, ii., 428; [2] "Brit. Med. Jour.," 1900, i., 706; [3] "Rev. de Chir.," 1900, No. i.; [4] "Archiv. für Klin Chir.," No. 59, p. 3; [5] "Brit. Med. Jour.," i., 1032, 1900; [6] Ibid., 1900, vol. i., Epit. 3.

PANOPHTHALMITIS. (See "Eyeball, Suppuration of.")

PARALYSIS AGITANS. *Græme M. Hammond, M.D., New York.*

Thelberg[1] says the frequent insomnia which seems to be due to auto-intoxication can usually be relieved by a single dose of 1 c.c. of **Spermine** given hypodermically. It also improved the characteristic gait.

Purvis[2] speaks of a new symptom which is occasionally met with, and, as it occurs early in the disease, is of considerable diagnostic value. It consists of a strong flexion of all the toes except the great toe, which is usually hyper-extended. This "curling up" of the toes interferes with walking, and is often so uncomfortable that the patient has to stand still for a minute or two until he can get his toes to relax and spread out flat again. In some cases the contraction may spread to the anterior tibial muscles.

REFERENCES.—[1] "Med. Rec.," June 2, 1900; [2] "Lancet," Nov. 11, 1899.

PATELLA (Fracture of). *Priestley Leech, M.D., F.R.C.S.*

Vallas[1] believes that separation of the fragments in fracture of the patella is due to laceration of the anterior and lateral portions of the capsule of the knee-joint, and closure of the rent should be done in addition to suture of the bony fragments. He believes that it is better to employ suture of the capsule alone than suture of the bone alone.

He describes his method of treatment as follows: The fractures in which bone alone is involved are to be treated by compression, massage and early movements, as in hæmarthrosis of the knee. Those fractures of the patella that are accompanied by a rupture of the fibrous sheaths surrounding the bone require radical treatment. The operation of choice is an arthrotomy with a toilet of the articulation and suture of the lateral tears of the capsule; suture of the bone is unnecessary. Our criterion as to whether operation should be done or not is, if at the end of the fourth day the patient can lift the limb from the bed, operation is unnecessary; if he cannot, operation should be done at once.

REFERENCE.—[1] "Rev. de Chir.," Oct., 1899.

PELVIS (Diseases of). (See also "Ovary," "Uterus," etc.).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

Bicycling and Pelvic Disease.—The question whether bicycling causes pelvic disease in women has been raised more than once (see "Medical Annual" for 1899, p. 173). Keith' records "Three cases of pelvic trouble caused by bicycling." Of the existence of the pelvic trouble in these cases there is no doubt; but it seems to me more than

doubtful whether bicycling can be regarded as their cause. In the first case the patient had an accident, and fell from her machine. Keith himself says that "the injury might have occurred had the patient been driving in any other way, so that it is hardly fair to credit bicycling with the result." In the second case the patient had suffered from melancholia, and had a heavy uterus lying forwards, her troubles dating from the birth of her second child. She remained well for some time, but after learning to cycle the old feeling of depression returned, and the uterus was found to be larger and harder and more anteverted. She continued to get worse for a time, but eventually improved under treatment. In the third case there was a retroversion with a prolapsed ovary, and the symptoms began very definitely at the time when the patient was learning to bicycle. In these last two cases there is no evidence that bicycling was the origin of the pelvic trouble; indeed, in one of them there is evidence that the latter was pre-existent. Retroversion with prolapse of the ovary is such a common condition, that before we could attribute it to bicycling in any given instance, we should require to know that it was not present before the patient cycled. That bicycling can rouse a dormant pathological condition to manifest symptoms, I have little doubt.

Turner,[2] the well-known medical cycling expert, goes so far as to say that there are no diseases induced by cycling, adding that in twenty years' experience he has never seen a case of illness which could be rightly attributed to judicious cycling. Without committing myself to this opinion, I think that in the interests of a popular and beneficent pastime, it should be shown, in cases of illness attributable to it, that the disease or disorder was not present before bicycling was indulged in, and that there are good grounds for supposing that a direct causal relation existed between the bicycling and the disease.

Phlebitis and Lymphangitis of the Pelvic Organs.—The differential diagnosis between these conditions, following labour, is discussed by Thomas.[3] He points out that in cases of phlebitis in puerperal septic infection the onset is sudden, the course rapid, and the symptoms very severe, accompanied by rigors and high fever. Often there is a purulent vaginal discharge (indicating a suppurative endometritis), sometimes the inflamed vein can be felt in the broad ligament, but there is no localised mass such as is found in lymphangitis and cellulitis.

On the other hand, in lymphangitis the onset is slower, and the course of the disease more gradual; often there is very little or no vaginal discharge, and, as the disease is more strictly localised, the prognosis is more favourable. In cases of phlebitis a fatal termination is the rule.

As regards treatment little can be done in cases of phlebitis; curetting is, however, indicated. It should be done gently, to avoid disturbing the thrombosed vein in the broad ligament.

Lymphangitis should be treated by disinfection of the uterine cavity, cold or hot applications to the abdomen, mild purgation, and early opening of abscesses.

Pelvic Exudations.—Treatment by **Continuous Pressure** has been carried out in Schauta's clinic, and the method is described by Halbau.[4] Freund's method is adopted, but with an important modification. Instead of passing into the vagina a condom filled with small shot, Schauta introduces a colpeurynter into that canal, and then pours quicksilver slowly into the instrument. The process of filling is less uncomfortable than when shot is employed, and a greater weight can be used with safety. Counter-pressure is afforded (as in Freund's practice) by a bag containing from 2 to 3 lbs. of small shot placed on the hypogastrium. This treatment was tried in cases of parametritis and perimetritis, including old cicatricial deposits, and in retro-displacements from bands. The pressure was applied usually in several sittings. It is admitted that success was not constant; and we should think that the method is not destined to be widely adopted.

REFERENCES.—[1] "Lancet," Dec. 9, 1899; [2] "C.T.C. Gaz.," Sept., 1900, p. 428; [3] "Zeits. f. Geb. u. Gyn.," vol. xxxix, part 3, 1899; [4] "Cent. f. Gyn.," No. 35, 1899.

PELVIS (Surgery of). (See also "Uterus," etc.).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

Cœliotomy.—Under this heading we may review some contributions on the technique and complications of abdominal operations on the uterus and appendages. Crawford[1] puts in a plea for more perfect technique, saying that if we wish to do expert surgery we must employ expert methods and become expert in their use; not only become familiar with the details of pelvic anatomy and its deviations, but more skilful and dexterous in the use of instruments, and raise our workmanship to the plane of art. When a hysterectomy can be done in seven or eight minutes, there is no virtue in keeping a patient on the table two hours, subject to the exhaustion and shock incident to prolonged etherisation. With this principle I am entirely in accord. With the practice of breaking records, and triumphantly showing specimens removed in so many minutes or seconds, I have little sympathy; by such procedures care is likely to be sacrificed to time. Neither do I approve of the opposite extreme, in which time is needlessly lost over unimportant details; such "pottering about" is

sometimes mistaken for carefulness. Time is not everything in an operation, but neither is it an unimportant factor; for, other things being equal, the shorter the operation the less is the tendency to shock. The idea is to lose no time, but to know exactly what one wants to do, and to do it expeditiously. Indeed, the matter is admirably summed up by Doyen's dictum, *Opérer vite et bien.*

Crawford discusses another point, namely, preventive hæmostasis in dealing with hæmatomas, tubal gestations and exudates about the tube. The usual practice, he says, is to dig them out and stop the mouths of the bleeding vessels as they are torn open. According to his view, the strategic point in the technique of these operations is the preliminary step of shutting off the blood supply before beginning the separation of the growth. This is effected by securing the ovarian artery an inch or two beyond the fimbriated extremity of the tube, and the utero-ovarian anastomosis just outside the uterine cornu.

In a discussion on untoward results following abdominal and pelvic surgery, Stanmore Bishop[2] emphatically expressed the view that to get perfect results, early operation was one of the most important factors; a large proportion of bad results, both immediate and remote, being due to undue delay. For the prevention of intestinal paresis after operation he advocated that the bowels should be got to act early, and that after laparotomy the foot of the patient's bed should be raised as far as practicable. For the prevention of ventral hernia, he considered that the one important point was to secure the proper coaptation of the fascial layers; the union of the two recti muscles was of secondary importance, since these muscles act longitudinally, and have no power to resist the lateral tension in the wound. The rectal sheaths, on the contrary, formed the tendons of insertion of the internal oblique and transversalis, and the securing of these sheaths counteracted the transverse traction occasioned by these muscles. On this ground, he advocated suture in layers. This view is shared by many operators. On the other hand, some recent writers recommend a return to the plan of through and through sutures in one layer. Among these is Mansell-Moullin,[3] whose objection is directed against buried sutures. In cases where buried sutures are absolutely necessary, he advises the use of catgut. In his opinion, silkworm gut is unsuited for the purpose, because the sharp bristle-like ends inevitably work through the skin. Silk is not to be trusted, however carefully sterilised; it is liable to become infected and cause an abscess.

Crawford also advises the through and through suture; unlike

Mansell-Moullin, he employs silkworm gut for this purpose. It is to be passed wide of the margin of the wound, namely, half-an-inch from the margin of skin and peritoneum, and one inch from the margin of the muscle and fascia. To secure the proper adjustment of the fascial edges he passes a silkworm gut thread longitudinally, like a Halsted's suture in the skin, the two ends projecting and being shotted to prevent retraction. My own view is that with proper asepsis buried sutures may be used without anxiety, and that the suture in layers gives the firmest scar; but under exceptional circumstances, as when a wound has to be rapidly closed, or if there is strong reason, from the nature of the operation, to fear infection, the one-layer plan may be adopted, care being exercised to take up the layers of fascia.

With regard to drainage, the tendency everywhere is to employ it only when absolutely necessary. Gulliond[4] describes the following method: If drainage is required, as he is about to finish the abdominal procedure, he takes one or several strips of sterilised or iodoform gauze and carries it into the abdomen with a forceps until it rests in the cavity which contains the oozing surface where hæmostasis or isolation is desired. The coils of intestine are raised and rest upon the aseptic Mikulicz drain, which is left in the pelvis while the abdominal wound is closed. The patient is placed in proper position for the thorough disinfection of the vagina, which is then incised in Douglas's *cul de sac*, and the vaginal end of the gauze is seized with a forceps and drawn into the vagina. The bleeding or infected area in the abdomen is thus well covered by the gauze, which has become spread out by the procedure of drawing it into the vagina. There is thus danger neither of spreading infection from below upward nor of a ventral hernia, since the abdominal wound has been tightly closed. On the tenth day the gauze is removed. He has used this method since 1892 with excellent results.

Complications.—The general subject of complications is dealt with in two papers by Smyly[5] and by Bonney,[6] which are worth careful perusal. Smyly approaches the subject from the aspect of deaths after cœliotomy, their cause and prevention. Bonney reviews in turn the untoward symptoms that may be present, and discusses their treatment.

With regard to post-operative temperature, Bonney observes that it is an excellent rule on first seeing a patient after operation to lay the back of one's hand on her face. A warm face is incompatible with either shock or hæmorrhage; thus this simple sign assures at once against these two contingencies, so important and so necessary to

diagnose at once. In an ordinary case the temperature rises pretty abruptly to 99·5° or 100°F. within the first six or eight hours. During the next twelve hours it frequently rises half a degree higher. It then begins to fall, and should reach the normal in from one to three days. Many cases, however, never exceed 99·5° at any time, whilst others may maintain a temperature of from 100° to 100·5° for a week without assignable cause or obvious ill-effects. A subnormal temperature means shock or hæmorrhage. A rapidly rising temperature is bad at any time, but it is especially so on the first or second day. A persistently high temperature after operation without anything obvious to account for it should always lead to an examination of the abdominal wound for stitch abscess. Fever occurring in the second week is often due to inflammatory effusion around the ligatures or is the herald of femoral thrombosis. Violent nervous disturbance may lead to very marked and sudden elevation of temperature, but it is not maintained. It is accompanied by a full though rapid pulse, and there is an absence of local abdominal signs. We shall briefly pass in review the important complications :—

Vomiting.—This Bonney divides into the irritative, neurotic, obstructive, and peritonitic forms. The first is due to gastritis set up by the anæsthetic, and is to be treated by withholding food by the mouth, and administration of **Nutrient Enemata**; if less severe it may be met by addition of lime-water to the milk, or by peptonising it ; 1 drachm of **Bicarbonate of Soda** to 3 ounces of hot water will be found remarkably useful if administered half-an-hour before the next feed is due, or a mixture of **Bismuth** and **Bicarbonate of Soda** may be given every three hours. For bilious vomiting there is nothing like the bicarbonate of soda in drachm doses. Neurotic cases must be dealt with by moral influence: in addition, a little brandy added to the food, and a mustard leaf to the epigastrium may be tried. In all forms of vomiting a soap-and-water enema gives excellent results.

Distension.—Bonney recognises four forms: epigastric, paretic, obstructive, and peritonitic. The cause and treatment of the first are the same as in irritative vomiting: the flatus is in the stomach, and may often be got rid of by administration of 5 minims of **Essence of Peppermint** and 30 grains of **Bicarbonate of Soda** in 3 ounces of hot water Both in this form, and in the next, which is due merely to loss of tone of the intestinal walls, symptoms will usually subside with the following treatment: The rectum should be washed out with ½ an ounce of turpentine in a pint of hot water, and if this is not entirely successful an enema containing ½ an ounce of turpentine and 1 ounce of castor oil to a pint of soap-and-water should be

thrown up the rectum as high as possible. If the condition be due to simple paresis of the intestinal walls this will certainly relieve it. A repetition of the turpentine wash-out and the frequent use of the rectal tube will keep the discharge of flatus going, and the symptoms will disappear in a few hours.

For obstructive distension, the only treatment is a colotomy, but it is rare to find a case in which the symptoms lead to a diagnosis in time to render this measure at all likely to succeed. Indeed, at first the existence of an obstruction can only be surmised; later, when the mischief openly declares itself, the patient is usually beyond the reach of surgical aid.

Pain.—This, according to Bonney, occurs chiefly on the night following the operation, and it is rarely so severe as to require a sedative. It is most marked in cases with tension on the parts, such as ventrofixation, or where after the enucleation of myomata the sac left is stitched to the anterior abdominal wall and drained. The single-layer method of closing the abdominal wound gives more pain than the three-layer method; and all incisions through the abdominal muscles are more painful than those through the aponeuroses. If **Morphia** is to be given at all it should be given on the first night for three reasons: (1.) The pain is at the worst; (2.) Distension, which morphia directly favours, never comes on until twenty-four hours after operation; and (3.) Peritonitis and obstruction which are masked by morphia do not as a rule declare themselves until the second day. Therefore, if morphia is to be given, it should be given on the first night, and in the form of a ¼ grain or a ⅓ grain suppository. But it is rarely required, and its habitual use is to be condemned.

Hæmorrhage and Shock.—At the present day most writers consider these conditions together, on the ground that most cases of shock are due to great loss of blood during the operation. Smyly applies the term shock to a group of symptoms which may be due to a variety of causes, but is generally in direct proportion to the magnitude and duration of the operation, especially when associated with long exposure and manipulation of the intestines, to the amount of blood lost, and the cooling of the body generally.

The number of cases of shock is encroached upon not only by the recognition of hæmorrhage as a cause, but also by the demonstration that some cases of supposed shock are in reality due to a very acute sepsis. Nevertheless, we cannot eliminate shock as a distinctive condition from the category of post-operative complications. The diagnosis between true shock and the simulation of that condition by active hæmorrhage is both difficult and important; there are features in

common, yet the treatment is essentially different. Bonney contrasts the two conditions as follows: "In both shock and hæmorrhage the face is cold, the lips are blanched, and the pulse is fast—140 or more. The face is always blanched in hæmorrhage, but it may be considerably less so in shock. The pulse, exceptionally, in both shock and hæmorrhage may be slow, but this is much more likely to happen in shock. Signs of shock date from the operation, but signs of hæmorrhage develop at some definite period afterwards and frequently quickly. This is the surest distinction between them. Shock tends to progressively improve, but hæmorrhage gets progressively worse. In hæmorrhage the patient is restless, but in shock she is quiet as a rule. In hæmorrhage the respirations are often sighing, while in shock they are quick and shallow. Brandy enemata cause shock to improve, but hæmorrhage would only be made more apparent by its administration. Dulness in the iliac fossæ is a fallacious sign of hæmorrhage, for the bowels get floated up against the parietes. The detection of a fluctuating tumour in the pouch of Douglas would be of more service. The necessity for a correct distinction between shock and hæmorrhage lies in the question of saline transfusion. If shock be diagnosed 1 ounce of **Brandy** per rectum is to be given at once, together with 10 ounces of hot water if there has been previous hæmorrhage. A hypodermic injection of 5 minims of **Strychnine** is also indicated. If the shock be severe or the patient does not react to these measures **Saline Venous Transfusion** to 2 or 3 pints must be unhesitatingly adopted; this is specially indicated in post-hæmorrhagic shock. If hæmorrhage, however, be diagnosed there is but one thing to do—namely, to secure the bleeding vessel. I am most strongly of opinion that transfusion should never be done until the bleeding point is secured, no matter how tempting the operation appears. It is as futile as trying to fill a bottle with a hole in its bottom. But, worse than this, it prevents nature from checking the hæmorrhage by her own method, that is, by the formation of a clot in the bleeding vessel, when, by reason of the hæmorrhage, the circulation through the part is sufficiently feeble to allow of it. That this is so is proved by the fact that after death the peritoneal cavity will be found to be full of a weak mixture of blood and saline solution. The vessels, in short, have been flushed out with salt and water."

Gilliam[7] takes a pessimistic view of the plan of re-opening the abdomen for hæmorrhage, based on the difficulty of diagnosis. In two cases where the symptoms pointed strongly to hæmorrhage he re-opened; in neither case was any sign of hæmorrhage found. He

therefore treated the next three cases expectantly; one recovered, the other two died; in both the latter, though hæmorrhage had been strongly suspected, *post-mortem* examination revealed that none had taken place. Moreover, he holds that the prognosis of internal hæmorrhage, when treated palliatively, is in itself good—instancing a number of cases as proof. Intervention in these cases is inherently dangerous. The death-rate far exceeds that of recoveries, even in the hands of the most careful and expert.

For my part, I share the view of those who hold that once the evidence of internal hæmorrhage is clear, the indication to re-open and secure the bleeding point is equally so.

For *Ether Bronchitis* Bonney recommends a mixture of 30 grains of **Bicarbonate of Soda**, ½ a drachm of **Aromatic Spirit of Ammonia**, and 20 minims of **Spirit of Chloroform** to 1 ounce of **Camphor Water**, to be taken every four hours.

Bladder Symptoms.—Mirabeau[8] considers that the vesical irritation so often observed after operation is usually due to infection or mechanical injury, while in a few instances it has been due to ligatures which have made their way into the bladder. He reports two cases of cœliotomy, with persistent vesical symptoms, in which cystoscopic examination showed general anæmia and atrophy of the mucous membrane, evidently due to circulatory disturbances, the arteries being abnormally small while the veins were prominent. He inferred that the collateral circulation had not been established as usual after ligation of the vesical arteries. In these cases treatment of the bladder itself may do more harm than good.

Bonney observes that it is a common thing for pain on micturition to develop about the beginning of the second week. On examination the urine is found acid, but it may contain a little pus. It is an interesting point that **Salol** in doses of 15 grains taken three times a day is almost a specific for this condition. It is no doubt due to an inflammation of the bladder wall by infection from the site of the operation. Probably at first the mucous coat escapes and so the urine is unaffected: subsequently when this also is inflamed pus appears in acid urine. The organism causing this form of cystitis is either the bacillus coli communis or ordinary pus organisms, not the micrococcus ureæ; therefore there is no alkalinity of the urine. After the cystitis has existed for some days a secondary infection with the last-named organism may occur and the urine may become alkaline and ammoniacal.

Other complications, *e.g.*, parotitis, sepsis, and foreign bodies left in the abdomen, cannot be discussed here for lack of space.

REFERENCES.—[1] "Med. Rec.," Sep. 10, 1898; [2] "Med. Press and Circ.," July 25, 1900; [3] "West London Med. Jour.," July, 1899; [4] Abst. in "New York Med. Jour.," April 7. 1900: [5] "Brit. Gyn. Jour.," May 1899; [6] "Lancet." Aug. 5, 1899; [7] "Amer. Jour. of Obst.," Nov., 1899; [8] "Cent. f. Gyn.," No. 11, 1899.

PEMPHIGUS. *T. Colcott Fox, M.B.*

Leredde,[1] of Paris, continues to work at his hypothesis that *dermatitis herpetiformis* (Duhring), and the rare *pemphigus vegetans*, and *P. foliaceus* are not, as generally surmised, due to direct nervous influence, but are due to alterations of the blood brought about by the action of the various toxic bodies on the leucocytopoietic organs, especially the bone marrow. Pemphigus foliaceus (Cazenave), as is well known, is characterised by a universal red thickened condition of skin, and careful search discloses (1.) denuded round surfaces beneath the scales representing abortive bullæ, and (2.) from time to time a flattened flabby bulla. As in dermatitis herpetiformis and herpes gestationis there is a marked diapedesis of eosinophile cells in the dermis and epidermis, and presence in the blood of considerable eosinophilia and mono-nuclear basophile (medullary) cells.

REFERENCE.—[1] "Ann. de Derm. et de Syph.," vol. x., No. 7, July, 1899, p. 601.

PERINEORRHAPHY. *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

Having recently dealt with this subject in the "Clinical Journal,"[1] I shall, in the present article, make some references to my paper. I desire also to call the attention of the readers of the "Medical Annual," to a very clear exposition of the operation for complete rupture of the perineum, by Cullingworth.[2]

The general view is now that when a perineum is torn during labour it should be repaired at once, notwithstanding the fact that in a small proportion of cases primary union does not take place. A failure is generally due to one of two causes. Either there has been a want of surgical cleanliness at the time of sewing up, or on following days, or the cutaneous portion of the perineum has been repaired, and the vaginal portion left gaping. This allows of accumulation of lochia in a pouch on the posterior vaginal wall, decomposition changes set in, and then the whole wound may break down. To prevent this, care should be taken to bring the vaginal as well as the cutaneous margins of the tear into apposition. Sometimes, however, the nature of the tear is itself responsible for the failure of union, and this is especially the case with a jagged tear in a perineum that has been much bruised. When the accident has resulted from a precipitate labour, or from a jerk during delivery with forceps, the tear is generally a clean one

resembling a surgical wound, and will heal readily under proper aseptic management. When, on the other hand, the tear results from long delay in the second stage, with the head bulging the perineum, the edges of the wound are usually damaged, and healing may not take place kindly, if at all. I think that careful observation will confirm the correctness of the view that when the wound breaks down, after primary perineorrhaphy, in spite of aseptic precautions and accurate suturing, it is because the wound was one of this jagged type with bruised edges. But even when the tear is of this kind, it is better that the attempt to repair it should be made.

There are two degrees of the operation, according as the sphincter ani is or is not torn through. The latter may be called a partial, the former a complete perineorrhaphy.

(1,) *Partial Perineorrhaphy.*—The steps of the operation are as follows: The patient having been prepared, anæsthetised, and placed

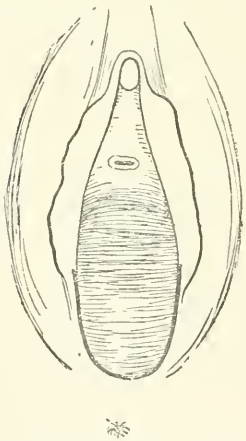

Fig. 19.—Perineorrhaphy for partial laceration; showing the line of incision.

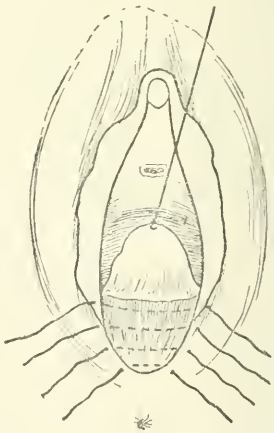

Fig. 20.—Perineorrhaphy for partial laceration; dissection of the flap, and passing of the lateral sutures.

in the lithotomy position, two fingers are introduced into the rectum, to put the parts on the stretch. The necessary incision is shown in *Fig.* 19, and is made by means of sharp-pointed, angular scissors, introduced in the middle line, and carried forwards in a curve on each side, skirting the line of junction of skin and mucous membrane, as far forwards as the posterior extremity of the labia minora. The incision

should end towards the *inner* side of the labia minora, and the anterior extremities of the two halves of the incision should be exactly opposite one another. The flap so marked out is raised as in *Fig.* 20. To assist in this step, an assistant should hold the flap in the middle of its posterior border, with forceps. In *Fig.* 20 it is shown held up by a thread. During the dissection, which splits the recto-vaginal septum, the operator must be careful neither to button-hole the flap, nor to let the scissors cut into the rectum. It is important that the flap should be well freed at its upper lateral portions. The next step is the introduction of the sutures. These may consist of silk or silk-worm gut. A needle with a large curve is introduced, unthreaded, at the margin of the incision ; it is passed deeply under the wound, and made to emerge at the corresponding point on the opposite side, after which it is threaded and carefully withdrawn. Great care is necessary not to pierce the rectum. Three to five sutures are passed in this way, according to the extent of the laceration, the most anterior one should correspond to the anterior limit of the incision (*Fig.* 20). Before these sutures are fastened, the flap must be dealt with in the following fashion : It is doubled up on itself laterally, by means of a continuous suture of catgut or fine silk, which starts at the apex of the flap and passes from side to side, bringing the edges gradually together, as in *Fig.* 22, until the two sides of the base of the flap have been approximated. This suture is tied and the deep lateral sutures are then fastened either by tying, or by means of shot and coil. This completes the operation. The method of dealing with the flap, just described, is an important point in the operation, for it shuts off any entrance of discharges into the wound from the vaginal side. The thickened spur of vaginal wall which results helps to strengthen the perineum as with a buttress.

(2,) *Complete Perineorrhaphy.*—This operation, which is an extension of the preceding one, has three objects : (*a,*) to provide a posterior wall for the vagina ; (*b.*) to form an anterior wall for the rectum ; (*c,*) to form a new perineum between the two structures. The first object is attained by raising a flap towards the vagina, as above described. The second object is effected by raising two small lateral flaps backwards and inwards towards the rectum. The lateral sutures fulfil the third object.

The incision is shown in *Fig.* 21. The point of the scissors is introduced in the middle line at the edge of the recto vaginal septum, which is put on the stretch by two fingers introduced into the rectum. The incision is carried along the edge of the septum, then forwards

along the junction of skin and vaginal mucous membrane to the posterior end of the labium minus. A corresponding incision is made on the opposite side. An incision is then carried backwards on each side for about half an inch, starting at the junction of the recto-vaginal septum with the skin, as shown in *Fig.* 21. The total incision is thus roughly H-shaped, the anterior limbs of the H passing forwards on each side of the vagina, the posterior limbs passing backwards on each side of the anus, and the cross-bar corresponding to the recto-vaginal septum. The anterior flap is dissected forwards as previously

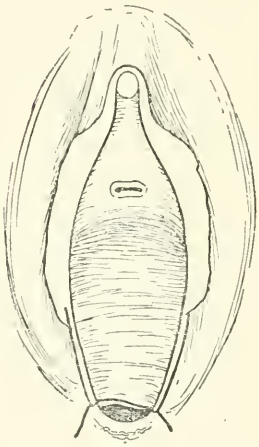

Fig. 21.—Perineorrhaphy for complete laceration; showing the lines of incision.

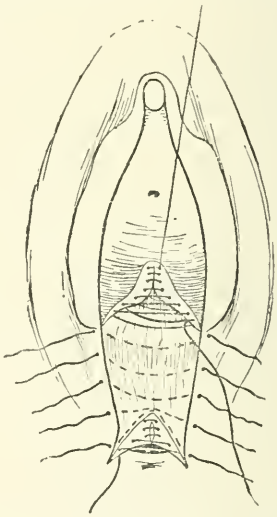

Fig. 22.—Perineorrhaphy for complete laceration; showing the method of suturing the flaps to form posterior vaginal and anterior rectal walls.

described (*Fig.* 20). Two triangular lateral flaps are then dissected up posteriorly, as shown in *Fig.* 22, the apex of each corresponding to the angle between the cross-bar and the posterior limb of the H incision. When turned backwards and inwards these two flaps meet, and they are then fastened together by a continuous suture of catgut or fine silk, which starts from the junction of the two flaps, and passes from side to side, gradually approximating first the median, and then the posterior edges of the flaps. At the stage shown in *Fig.* 22 the wound is shaped roughly like a four-sided pyramid with its base superficial.

The anterior border of this base is formed by the anterior flap, the posterior border by the joined posterior flaps, the sides of the base are formed by the skin edges. In the completed operation the sides of the pyramid are brought together, whilst the anterior and posterior borders become doubled up on themselves, forming ridges respectively on the posterior vaginal and the anterior rectal walls.

After the posterior flaps have been brought together, the rest of the operation is performed as described under partial perineorrhaphy, that is to say, the deep sutures are passed from one skin margin to the other, the anterior flap is sutured as shown in *Fig.* 22, and, lastly, the deep sutures are fastened.

The operation of complete perineorrhaphy, as described by Cullingworth, is practically the same as that given above, except that he employs interrupted sutures for the vaginal and rectal flaps; for the rectal sutures he uses catgut, which is cut short; for the vaginal he employs silkworm gut, and directs that the ends should be left long and curled up in the vagina, to facilitate removal.

Some operators prefer to pass the lateral sutures in two layers, a deeper layer comprising the subcutaneous structures only, and a superficial layer uniting the skin margins. This plan avoids the subsequent indrawing and puckering of the perineum in the middle line, which sometimes results from the plan of sewing up in one layer.

Mabbott[3] calls attention to this point: he says that the faulty result is due to passing the sutures in too shallow a fashion, so that the thread, before tying, describes an oval, with the long axis at right angles to the surface. As the thread, when tied, tends to a circle, he says that the effect is to make tension between the deep part of the wound and the skin, where it is least required, instead of transversely, whereby the raw surfaces would be more firmly brought in contact. The remedy he proposes is to make a wide lateral sweep with the needle in its course, so that the thread, before tying, shall form an oval with its long axis transverse, and its shorter one at right angles to the skin surface. His paper is illustrated by diagrams which, if rather crude, are nevertheless convincing.

After-treatment.—I am glad to find myself in complete accord with Cullingworth on four cardinal points: (*a*,) the importance of keeping the wound clean and dry; (*b*,) the early opening of the bowels; (*c*.) the needlessness of tying the patient's legs or ankles together: (*d*.) the desirability of keeping the patient lying down in bed for at least fourteen days.

Cullingworth lays stress on the importance of securing the torn and retracted ends of the sphincter ani, as advocated by Wiltshire[4] in 1879,

and more recently by Howard Kelly. There is no doubt that on the careful attention to this matter the success of the operation, as gauged by the regaining of control over the bowel, entirely depends. As regards the best time after delivery for the performance of secondary perineorrhaphy, Cullingworth fixes this at two months. Before this time the tissues are usually too soft and friable to bear the strain of a plastic operation ; whilst if too long delayed, the muscles will be liable to have become atrophied, and the result will be less likely to prove satisfactory. Nevertheless he considers that, however long a time has elapsed since the injury took place, it would not be right, if a patient desired an operation, to refuse to do it.

In conclusion, I wish to call attention to the very clear drawings which illustrate Cullingworth's paper.

REFERENCES. —[1] "Clin. Jour.," June 14, 1899 ; [2] "St. Thomas' Hosp. Reports," vol. xxvii. ; [3] "New York Med. Jour.," April 14, 1900 ; [4] "Trans. Obst. Soc. Lond.," vol. xxi. ; [5] "Bull. Johns Hopkins Hosp.," Jan., Feb., Mar.," 1899.

PERITONITIS (Gonococcal). *C. F. Marshall, M.D., F.R.C.S.*

Muscatello[1] reports the case of a woman, aged forty-eight, with a history of gonorrhœa contracted twenty-five years previously, and persisting more or less since with periods of alternate quiescence and exacerbation. For twenty days previous to observation she had suffered severe pain in the pubic and iliac region, accompanied by fever. Per vaginam, pyo-salpinx and parametritis were diagnosed, and pus was evacuated per vaginam. This was soon followed by symptoms of peritonitis, and two days after the first operation, laparotomy was performed. General seropurulent peritonitis was found. The patient died. Bacteriological examination of the pus in the pyo-salpinx and in the peritoneal cavity showed the presence of gonococci.

REFERENCE.—[1] "Il Policlinico," Aug., 1899.

PERTUSSIS. *Henry Dwight Chapin, M.D., New York.*

Dr. N. R. Norton[1] gives two methods of treating pertussis without drugs : (1,) The administration of **Carbonic Acid Gas** by rectum ; and (2,) The use of the **O'Dwyer Laryngeal Tube.** The method of administering the carbonic acid gas is very simple. A wide-mouthed bottle or jar, holding a pint or more, is supplied with a perforated cork, through which is a glass tube extending not more than half way to the bottom. To the outer end of the glass tube is attached about three feet of flexible rubber tubing, which has at the end a detachable hard-rubber nozzle suitable for rectal injections. The bottle is filled

about one-third with water; 6 drachms of bicarbonate of soda are dissolved in this, and there is then added a ½ ounce of crystals of tartaric acid. As the tartaric acid dissolves slowly, the gas is liberated at the proper rate of administration. The rectal tube is inserted, and the administration of gas continued as long as desired. The above quantities were found to supply the gas for the longest treatments used, or about ten minutes. Treatment was given three times daily, some two or three hours after meals. One hundred and fifty children had this treatment. Of the total number one hundred and forty-three were apparently decidedly benefited. The vomiting ceased by the second or third day, and the number of paroxysms was reduced. The use of the laryngeal tube was suggested by Dr. O'Dwyer in grave cases of whooping-cough accompanied by frequent and severe vomiting, with consequent loss of flesh and strength. Intubation acts favourably by absolutely relieving the spasm of the glottis.

Dr. C. G. Kerley[2] reports upon drug values as observed in seven hundred and fifty-two cases of whooping-cough, and reaches the following conclusions:—

(1,) That every case of whooping-cough may be ameliorated either by modifying the severity or by diminishing the number of paroxysms. In many cases both the severity and number of the paroxysms may be favourably influenced.

(2,) That remedies, sedative in character, with fresh air, furnish the best results.

(3,) That if a remedy is to be of service its beneficial effects will be noticed within twenty-four hours, always within forty-eight.

(4,) That the best results are obtained when the antipyrine and bromide are commenced at the height of the paroxysmal stage, and then pushed.

(5,) That these remedies being sedative in character, the effect may be lost in a prolonged case, requiring a change of treatment.

(6,) That children may have whooping-cough and never whoop.

Dr. Cima[3] finds that leucocytosis is present in unexampled whooping-cough in children. There is increase in the number of white cells in babies and children affected with broncho-pulmonary complications or other morbid conditions such as marked anæmia, rickets, etc.

Dr. P. Horveno[4] has studied the paralyses of whooping-cough, which are rare. They may be divided into three classes: (1,) Paralyses of cerebral origin, which are the most frequent; (2,) Paralyses of bulbar origin. The form assumed by these may be very

variable. Sometimes there is simple paraplegia and sometimes the clinical picture is such as to resemble that of Friedreich's disease or of disseminated sclerosis ; (3.) Parálysis of peripheral origin, such as polyneuritis.

Dr. H. S. Olliphant[5] advises the treatment of whooping-cough by **Formalin.** After the third application to the throat, marked improvement was observed, and in one case a complete cure. The doctor regards pertussis as simply an infection of the fauces—a place perfectly accessible to disinfection, and therefore curable in a few days. Free emesis follows each application, thereby dislodging the germs as well as destroying them.

Dr. M. Helm[6] has tried **Antitussin** in sixteen cases of whooping-cough, and it succeeded even in the worst, where quinine and belladonna failed. It is used externally and is really an ointment made up of difluorphenyl 5 parts, vaseline 10 parts, and lanolin 85 parts. The neck, throat and interscapular space are rubbed well with the antitussin, after the skin has been washed with warm soapsuds and dried.

Dr. V. Gilbert[7] has procured striking results in modifying the course and severity of whooping-cough by the administration of **Antidiphtheritic Serum.** The first suggestion of the method came from the beneficial effects secured by the administration of antitoxin in a case of co-existing pertussis and diphtheria.

REFERENCES.—[1] "Arch. Ped.," April, 1900 ; [2] Ibid. ; [3] "Pediatria," No. 9, 1899 ; [4] "Thèse de Paris," 1899 ; [5] "New York Med. Jour.," March 21, 1899 ; [6] "Berlin. klin. Woch.," No. 50, 1899 ; [7] "Rev. Méd. de la Suisse Rom.," June 20, 1899.

PHARYNGOTOMY (Sub-Hyoid). *Priestley Leech, M.D., F.R.C.S.*

B. Honsell[1] gives the histories of four cases of this operation performed in Brun's clinic for removal of artificial teeth, for a carcinoma of the larynx, for a sarcoma of the pharynx, and for a lupus of the aditus laryngis. Three patients recovered ; the one death in a case of carcinoma being due to an acute miliary tuberculosis. Preliminary tracheotomy was done in all the four cases.

Honsell has collected and summarised ninety-four cases from the literature of the subject. Feeding was accomplished by leaving a stomach tube *in situ* for one or two weeks. The necessity for doing tracheotomy is a difficult one to decide.

The mortality of the cases collected is as follows : sixty-five cases had preliminary tracheotomy done with a total mortality of twenty-two (34 per cent.), of whom nine (14 per cent.) died of pneumonia : in three cases tracheotomy was performed secondarily : two died (66 per cent.), and both died of pneumonia (66 per cent.) ; in eighteen cases

tracheotomy was not done: two died (11 per cent.), and both died of pneumonia (11 per cent.).

It must be remembered that in general tracheotomy is done in the more severe cases; the author thinks that in cases where little bleeding is expected and primary healing may be looked for, tracheotomy may be dispensed with as a primary measure, but it must be remembered that in the after treatment it may be required at any moment.

In the more severe cases where an extensive procedure is contemplated, tracheotomy is preferable, to avoid œdema of the glottis.

The indications for this operation, according to Langenbeck, are:—

(1.) Foreign bodies impacted in the pharynx—the removal of which through the mouth is impossible.

(2.) Tumours in this portion of the pharnx, having a broad base in the mucous membrane, or which originate in the wall of the pharynx, between the mucous membrane and the muscular wall.

(3.) New growths in the epiglottis, in the arytenoid cartilages, and exceptionally for the removal of benign laryngeal growths of large size.

REFERENCE.—[1] "Beit. z. klin. Chir.," Band xxv, Heft 1.

PHARYNX (Diseases of). *W. Milligan, M.D.*

Tuberculosis of the Pharynx.—Schrœtter[1] describes two cases characterised by pain in swallowing and the appearance of shallow map-like ulcers. Bacilli were found in scrapings from the ulcerated surfaces. Healing took place after curettement and the application of **Lactic Acid.**

Juffinger[2] records a case of primary tuberculous ulcer of the pharynx occurring in a youth aged seventeen, who presented no other indications of tubercle. The ulcer was situated upon the post pharyngeal wall and measured 3 c. cm. in diameter, and had ill-defined crenated and partly undermined edges, the base being almost completely covered by a greyish yellow membrane. Treatment consisted in scraping and in the rubbing in of an 80 per cent. solution of lactic acid.

Diabetic Ulcers of the Pharynx.—Freudenthal[3] anæsthetises the ulcers with cocaine solution and then injects about 10 grains of the following preparation:—

R	Menthol	2 to 10 parts		Orthoform	12½ parts
	Oil of Swt. Almds.	30 ,,		Distilled Water	to 100 ,,
	Yolk of Egg	25 ,,			

The Influenza Throat.—Fleming Phillips[4] remarks that a distinguishing feature of influenza sore throat is a narrow patch of

superficial ulceration upon the edge of the anterior faucial pillars of a symmetrical nature. In the chronic stage, which is the one most frequently met with, the denuded surface is usually granular in appearance, the granulations being at times exuberant. The lesion is painless, unless from some microbic infection of the ulcers the chronic congestion passes into inflammation. In these inflammatory exacerbations of the throat affection the temperature of the mouth may be considerably higher than that of the axilla.

REFERENCES.—[1] "Jour. of Laryng.," Aug., 1899; [2] "Brit. Med. Jour.," Aug. 26, 1899; [3] "Ann. of Otol. and Laryng.," Nov. 1899; [4] "Brit. Med. Jour.," Nov., 1899.

PHTHISIS. *Prof. H. P. Loomis, M.D., New York.*

The salient feature of the year in pulmonary tuberculosis might be said to be the interest evinced everywhere in the "**Open-air**" **Treatment** for the patient as distinct from the serum treatment or germicidal attempt upon the bacillus; the building up and strengthening of the fortress by means of Nature's remedies rather than the arrest of the invading foe by drugs and antitoxins. A notable modification in "open air" treatment comes from the change of opinion, gradually spreading, during recent years, as to the actual value of climate. Patients are no longer sent *nolens volens* to certain specified and favoured localities as the only places where Nature can work her beneficent cure. It is realised that pure atmosphere and sunlight are the true curative agents, not altitude and air quality only, and while these latter may be of distinct assistance in many cases, they are no longer considered essential, except by a decreasing number of extremists, who must then deal almost exclusively with a class of patients retired from all kinds of business, and wealthy enough to move readily, with or without their families, to the advised resorts.

The importance of wholesome diet, graduated exercise, rational habits of life, simple amusements, and bright, cheerful surroundings is being insistently pointed out by eminent specialists as necessary concomitants to constant exposure to fresh air and sunshine. To this must be added the absolutely needful and well-known precautions against re-infection in the home, such as the disposal, disinfection, and destruction of all bacillary excreta; also, the constant supervision of a medical man, and where obtainable, the services of a well-trained nurse, or an intelligent and trustworthy attendant. On such lines of "open-air" treatment as here indicated, conditions for cure would not be unattainable except by the very poor, and for them suitable sanatoria should be provided at the public expense. Such

an outlook is hopeful in itself, and marks the modification in treatment referred to above.

The extraordinary results obtained at German sanatoria of low altitude, and not possessing all the requirements of climate formerly deemed so essential, are largely responsible for this change in opinion.

Fresh-air Treatment.—At a meeting of the Johns Hopkins Medical Society on November 20th, Dr. W. Osler[1] read a paper on this subject. He prefaced his remarks with the statement, that in 95 per cent. of the cases seen by physicians the patients were unable to afford treatment away from their homes. Arrest or cure of tuberculosis was a question entirely of nutrition, and of the measures by which the general nutrition of the body might be encouraged. The first and most important was fresh air. The quality of fresh air in large cities might not be very good, but it was the best that a large proportion of their patients could get to breathe, and it was a great deal better than the atmosphere of the over-heated, ill-ventilated rooms in which many of them lived. He gave the following directions: Take the almanac and count off the hours of sunshine. In the winter cut off two hours in the morning and one hour in the evening, and for the rest of the day the patient must be out of doors. If there was no possible arrangement for life out of doors, the patient must be put in a room with southern exposure, and the bed moved in the sunshine, with the windows wide open. If there was a balcony or veranda with a good outlook towards the south, it should be arranged for the patient: if not, a shelter could be put up in the yard at a very moderate cost. On a well-padded lounge, covered with a couple of thicknesses of blankets, the patient should sit or recline all day. Only on blusterous, stormy, or very rainy days was the patient to remain in the house. No degree of cold was a contra-indication. This continuous open-air life at rest was the most powerful influence we possessed to-day against the fever of tuberculosis. Secondly, they must consider the diet. In any long series of cases the patients who did well were those who took plenty of food. Each case might be dealt with separately, but as large a quantity of food as possible should be given, even, when possible, insisting on overfeeding or stuffing. For some time he had been urging patients to accustom themselves to take raw eggs, beginning with one three times a day, and increasing it until they could take twenty to twenty-four a day. If broken into a cup and sprinkled with a little pepper and salt, the egg could be readily swallowed without breaking the yolk.

Dr. Clifford Beal[2] observes that the highest physiological perfection

among human beings is to be found among peoples who lived in the purest air. Patients should be kept away from crowded spaces, and the living rooms must be kept free from stagnant air, and kept well flushed with fresh air at all times when unoccupied. Exercise, sleep and food, he says, must all be regulated and systematised, and more attention is paid to such a system if it is written down for the patient's guidance. He thinks treatment is best carried out away from the home, but this is not essential. In view of recent experience the patient should be urged to make the necessary sacrifice of time and money in the early stages.

Dr. Walters[3] says the open air treatment does not merely consist in exposure to fresh air while leaving the patient to his own devices, but is a combination of hygienic remedies requiring judgment and experience, and calling for more or less continuous supervision, by a resident physician. Treatment in a sanatorium has the advantages of hospital treatment arising from co-operation and from the supervision of a number of more or less similarly situated cases by one medical man in the same place, and is of greater economy, and of greater efficiency.

Dr. Heron[4] remarks as a significant fact the unanimity of opinion concerning the open-air treatment. The patient, while living as much as possible in the open air, should be occupied while out of doors with some physical employment or amusement. He should eat abundantly of wholesome food, and his bedroom be so arranged that, within proper limits, he should sleep in the open air. Dr. Heron suggests as occupations: gardening and fruit growing, some branches of farming, civil engineering, the work of a land agent, etc. And in his opinion it is an irksome and needless rule for people in the early stages of tuberculosis to be required to see their medical advisers daily. He does not think life in a sanatorium necessary to a proper carrying out of the open-air treatment. He believes that this treatment could be taken as well at home, provided the necessary advantages of position and surroundings were present, and provided the patient was under the supervision of an efficient medical adviser.

Myoidema in Pulmonary Tuberculosis. — If in an advanced case of pulmonary tuberculosis a point on the chest wall corresponding to the clavicular origin of the pectoralis major be sharply struck with the tip of the forefinger, the phenomenon usually known as "myoidema" will probably be produced. The term was first made use of by the late Mr. Lawson Tait. Dr. Hugh Walsham[5] describes it as follows :—

Myoidema may be divided into two varieties, viz., the fascicular and

the nodular. The fascicular variety is the one most easily produced. At the point which is struck a sulcus is formed, which quickly travels to the origin and insertion of the muscle, where it is lost. In the nodular variety there is formed at the point struck a soft, quivering tumour, which, after oscillating backwards and forwards, as if uncertain of its position for a second or two, finally comes to rest, and after a few seconds gradually fades away. If the point struck be carefully watched the initial pallor produced by the blow quickly gives way to redness, reminding one forcibly of the *tache cerebrale*. This redness of the skin remains for a considerable time, occasionally for ten minutes, or even longer, before it finally disappears. Both the fascicular and nodular varieties may be obtained in other muscles besides the great pectoral. It is very commonly found in the deltoids and scapular muscles, especially in the infra-spinatus. After the tumour has faded away it may again be produced by another tap on the muscle, not necessarily in the same spot, but near it. Dr. Walsham thinks that pulmonary tuberculosis may be divided into three classes with respect to this sign.

In the first class he should say that the sign was absent in the vast majority of cases, although a faint fibrillar contraction may occasionally be obtained.

In the second class the fibrilla variety can always be obtained, and frequently the nodular variety, and in the third class the nodular variety may nearly always be produced. He concludes that myoidema is nearly valueless as an early sign of pulmonary tuberculosis. It only becomes well marked when other physical signs leave no doubt about the diagnosis of the disease. The sign is of value he thinks as indicating the condition of the muscular system of the patient, and as showing approximately the amount of wasting that has taken place..

Thrombosis in Pulmonary Tuberculosis. - Ruge and Hierokles[6] examined the clinical records of one thousand seven hundred and seventy-eight cases of phthisis, and found the complication of venous thrombosis nineteen times, or fully 1 per cent. Undoubtedly, this complication is more frequent than these figures indicate, since in many cases the clinical signs are not marked, and in autopsies the veins are often not examined. The œdema is often trivial, especially if the collateral circulation is quickly established. The pain at times may be slight, or even absent. The complication was usually found in severe cases of phthisis, and appeared, as a rule, two or three weeks before death, but in one case the patient recovered from the (femoral) thrombosis. The veins of the lower extremities were most frequently

involved, after that the right ventricle and the pulmonary artery, and less frequently other veins.

Rapid Tuberculisation of the Lung after Thoracocentesis. — Pinquet, working under the direction of Mollard,[7] emphasises the fact now gaining weight, that the evacuation of pleuritic serous effusions is often followed by the outbreak of tuberculous changes in the lung. Notwithstanding that in a considerable number of cases thoracocentesis is not followed by any complication, there seems to be no guide in any given case as to what the result may be. The explanation offered is that the false membrane covering the two pleural surfaces is loaded with tubercle bacilli. Should the two pleural surfaces come in contact the bacilli appear to be aided in their invasion of the lung. Pleuritic effusion most effectually prevents this contact and friction, and keeps the inflamed surface in a state of absolute rest. The lung itself is similarly kept at rest, and the effusion appears to have a most important bactericidal action. Under these circumstances the proper course is *not to evacuate if such a course can be avoided.* In the event of the patient requiring relief on account of pressure symptoms, as small an amount of fluid as possible should be withdrawn.

Value of the Tuberculin Test in the Diagnosis of Tuberculosis.— Dr. Edward O. Otis[8] summarised an article on this subject as follows : (1,) The tuberculin test indicates tuberculosis by a general reaction before it can be detected by other methods, except the X-ray, in a large majority of cases, with a dose of from 5 to 10 mg. of Koch's original tuberculin ; (2,) No injurious results occur from the use of tuberculin in these cases ; (3,) Proved tuberculosis, in a more or less advanced stage, may fail to give the general reaction from doses of from 10 to 12 mg. ; (4,) Syphilis gives the reaction in an undetermined proportion of cases ; (5,) There is a dose, undetermined, at which a non-tuberculous person may react or simulate a reaction ; (6,) The reaction may be deferred from six to twenty-four hours.

As rules to be observed in making the test : (1,) Always use the same tuberculin, of a standard strength ; (2,) Use aseptic precautions in giving the injections ; (3,) Make the injections deep into the muscles of the back, arm, or leg ; (4,) Keep a two-, three-, or four-hourly chart of the temperature, if possible beginning twenty-four hours before the injection ; (5,) Allow several days to elapse before repeating the test ; (6,) In early cases depend on general reaction ; in late cases, if the general health fails, carefully look for the local reaction.

The Significance of the Pulse in Tuberculosis. — According to M.

Durand[9] the examination of the pulse in tuberculosis is of the utmost importance. The condition is serious if the pulse rate is maintained above 100, desperate if it exceeds 120 for several days. Consequently, he says, the examination of the pulse permits us to recognise curable forms of tuberculosis, or, at least, those of slow progress.

Monteverdi[10] calls attention to the influence of syphilis on tuberculosis, and describes a case where all the signs and symptoms of the disease steadily improved after the appearance of the syphilitic lesion and did not recur, and the patient from being in an advanced condition was restored to health. He also quotes two other cases where syphilis appeared to have a beneficial *influence on the tuberculous process*.

Any facts connected with the life history of the tubercle bacillus or any of the allied forms belonging to the tuberculous group are of special interest at the present time when so much is being attempted to minimise their power.

Dr. Moëller[11] claims to have successfully isolated the Timothy grass bacillus which inhabits the slopes of Gœbersdorf, and appears to resemble the Koch's bacillus more nearly than any of its predecessors. This discovery may open up new paths for inquiry. The vegetable world has not been suspected of harbouring organisms belonging to the tuberculous family. The Timothy grass bacillus under culture was found to be almost identical with the growth of Koch's bacillus. Animals died with lesions resembling those of miliary tuberculosis after injection experiments, their lungs, liver, and omentum being chiefly affected.

Dr. Edward Squire[12] emphasises dyspepsia as being a common and most important symptom of early phthisis, especially in young people. It is, however, the concomitant of wasting that makes the dyspepsia of initial phthisis of such diagnostic importance.

Alteration in the percussion note is one of the first physical signs to appear, and the presence of fine moist *râles* is of special importance.

Dr. S. G. Bonney,[13] of Denver, deplores the failure of physicians to examine upon the bare skin, and the non-recognition, in the absence of *râles*, of the various modifications in disease of the normal respiratory tracts ; the non-appreciation of the almost pathognomonic significance of the circumscribed bronchitis, even in the absence of dullness or other auscultatory signs.

With regard to *notification of phthisis* it begins to seem probable that the general decision of our profession upon this difficult subject

will be that legislation for the prevention of human tuberculosis is not desirable. It is reported that at a meeting called by the Prince of Wales, at Marlborough House, there was complete agreement among the speakers and Council on the conditions of tuberculosis, and the pressing need for general and united action to reduce the spread of the disease. A widespread public knowledge of the danger and methods of prevention being the only source from which there is hope for any real good being done in the arrest of the disease. From Lord Salisbury's statements it appears that the English government is not likely to move in the matter, except in the direction of diffusing information, as through Boards of Health or other practical ways; nor does it seem advisable for the medical profession to urge any other view upon the legislature. The profession is fully alive to the danger of infection, and is finding that tuberculous patients are willing to carry out precautions to prevent infecting others, especially when they apprehend their own prospects are improved by extreme care. In this matter the public conscience may be relied upon to follow that of the profession, as the duty of both becomes more and more apparent.

It has been claimed that the objections which would probably be urged against the notification of phthisis would probably be of three kinds: (1,) The very important one of breach of confidence; (2,) That the notification was valueless; and (3,) That the system was impracticable, and it was added that the first objection might be overcome by obtaining the permission of the patient to the notification. The second answered by proving that the knowledge of cases enables the sanitary authorities to act with greater benefit to the public, as it enables them to disinfect at intervals the rooms occupied by phthisical patients, to suggest a certain amount of isolation, to secure proper hospital accommodation for phthisical patients, and by the visits of the sanitary officer often to do away by those in authority with such sanitary shortcomings as the overcrowding of dwellings; that it would also tend to educate the public as to the communicability of the disease, and by the distribution of handbills, and frequent explanations would do something to overcome the great ignorance on this subject especially among the poor.

The answer to the third objection might be that notification has already been put in action; and in many places is already in practical working operation.

At the Tuberculosis Congress held in Berlin, May 24th, 1900, addresses in German, French and English, emphasised the cosmopolitan character of the congress, and were also the best evidence of the

world-wide interest the question of the *prevention of tuberculosis* has aroused. Dr. Krieger, of Strasbourg, discussed the influence of occupation on the incidence of tuberculosis, and classified the occupations which had a marked influence on the spread of the disease, as follows :—

(*a*,) Occupations which involved a great liability to infection, such as sick-nursing.

(*b*,) Occupations which favoured the occurrence of catarrh, or the obstructions or lesions of the bronchi, thereby producing local susceptibility. Such occupations as those which exposed the working people to accumulations of dust in the lungs, or to danger of dust containing sharp particles or corrosive substances.

(*c*,) Occupations in which, owing to attitude assumed, the upper parts of the lungs were not fully expanded.

(*d*,) Sedentary occupations which led to improper muscular development and a general weakening of the organisms, especially of the heart.

Professor Bollinger, of Munich, maintained that tuberculosis of cattle and pigs was identical in its etiology with human tuberculosis, and that the enormous prevalence of tuberculosis in cattle was a great danger to the health of the people. The infected flesh of tuberculous animals varied with the stage and the degree of the disease ; however, the danger to man from this source was probably not very great, and could be obviated by the preparation of the meat and abstention from raw uncooked meat.

Professor Pfluger said that tubercle bacilli were parasites which did not flourish outside the human body, and which required an artificial nutritive medium for their development. In such surroundings they underwent morphological changes, and lost virulence more or less speedily. Thus there might be non-virulent tubercle bacilli which had no infective power, but it would not be justifiable to make this fact responsible for doubts as to the connection of cause and effect between the bacilli and the disease.

THERAPEUTICS.—These are said to be based upon three points : (1,) The tubercle bacillus ; (2,) The disease germs which set up mixed infection : and (3,) The predisposition, the resisting power, and the eccentricities of the patient. By far the most important factor in the recovery from tuberculosis is the resisting power of the patient, which if present, must be added to, and if wanting must be supplied. Whatever makes for resisting power makes for recovery. It is in building up this resisting power for the patient that drugs may be useful. While medicines may help to digest food and improve assimilation, and keep

in normal condition the functions of the important organs of the body, and may resist tissue waste, it must not be forgotten that nothing should be given which may irritate or interfere with the function of any organ. If a drug disagrees in any way with a patient it should not be given, no matter how well it may have done in another case.

Dr. J. Lardner Green[14] thinks **Formalin** useful, when inhaled in a fine spray, in catarrhal and tuberculous affections of the lungs. Diseased mucous tissues are more tolerant of the vapour than are healthful mucous membranes. He says formalin has been successfully used in skin diseases, notably in epidermycosis decalvans, and e. tonsurans. He recommends inhalation in the early stages of pulmonary tuberculosis, stating that formalin diminishes the number of bacilli in the sputum, a fact confirmed by Dr. Murrell early this year. The most satisfactory mixture for the inhalation has been :—

℞ Formalin ℥j | Aq. pur. ℥v
Glycerin ℥ivss |
M.

To be used with an inhaler four to six times in the twenty-four hours, as may be suitable.

Should there be more than usual sensitiveness in the air passages, aromatic spirit of ammonia (♏x) may be added to the above mixture.

He says that the combination of such inhalation with open-air treatment should be earnestly recommended.

Von Criegern[15] reports the results of his experience with **Camphorated Oil** in the treatment of pulmonary tuberculosis among dispensary patients.

Cases of uncomplicated tuberculosis, that is, unattended with ulceration, were uninfluenced by the oil. In cases with ulceration complicated by hæmoptysis it appeared as if the treatment rather predisposed to the occurrence of the hæmorrhage. In cases with cavities, however, the oil proved distinctly useful. Great symptomatic relief was afforded in cases in the last stages of the disease. The presence of nephritis is a contra-indication to the employment of the treatment. Subcutaneous injection of camphorated oil is painful, and the preparation is too irritating to be administered by the mouth, but made into an emulsion with yolk of egg it can be readily given by the rectum as an enema.

Wertheimer[16] strongly recommends **Ichthyol** internally for phthisis. After taking for eight to ten days, or in advanced cases perhaps longer, cough and expectoration diminish, the temperature becomes and

remains normal, the appetite slowly but steadily improves, and the patients gain in weight. The last effect is almost constant, and is what the patients themselves notice most. Those who use ichthyol will find that the necessity for morphine and atropine becomes more and more rare. It is best given mixed with equal parts of distilled water, of which 1 to 2 drops should be given in a liquor glass of water three times a day after meals. The dose is gradually increased to 10 drops three times a day. Epigastric weight or pain is a sign that the maximum dose for the individual has been exceeded.

Dr. J. E. Stubbert reports having used ichthyol in the form of enteric pills with very satisfactory results; 5 grains three to four times a day. The remedy appears to be indicated, not only in pulmonary tuberculosis but also in cases involving the intestines and genito-urinary tract. Very large doses of the preparation can be tolerated by most patients, and without any gastric disturbance ensuing; as much as 60 grains daily may be taken in some cases.

Dr. William Murrell [17] says that for some time past there has been a fairly widespread belief that certain essential oils when inhaled have the power of retarding the growth of the tubercle bacilli, and as it seemed desirable to arrive at some definite result, certain experiments were made, partly clinical and partly bacteriological.

While there are many essential oils only two were selected as being the most characteristic ones—oil of cinnamon and oil of peppermint. Observations were carried out on twenty patients suffering from phthisis, none of whom were confined to bed; some were in the incipient stage, and some had cavities in one or both lungs. In some cases the patients were made to inhale once or twice a day a preparation of oil of cinnamon or oil of peppermint, while in other cases the patient was given a supply of material, and instructed to inhale it almost constantly day and night. The clinical result was undoubtedly a failure, and it was with some anxiety that the conclusions of the bacteriological investigations were awaited. After a series of most carefully carried out bacteriological experiments in the laboratory of the Westminster Hospital Medical School by Dr. Blaxall, it was found that the vapour of oil of cinnamon exerted no retarding or inhibitive influence on the growth of the tubercle bacillus. When the pure oil of peppermint was used the results were the same as in the previous experiments, all the inoculations growing well and showing no signs of retardation. When the essential oil of peppermint was used no deleterious influence was observed on the growth of the tubercle bacillus. In all experiments the smell of the oil was

most intense, and clung to the exposed tubes for a very long period.

The essential oils having thus proved useless, experiments were made in other directions, and after many failures **Formaldehyde**, or **Formic Aldehyde**, CH_2O, obtained by the oxidation of methyl alcohol was adopted. From these experiments it was seen that even a weak solution of formic aldehyde, such as 6 per cent., exercised a very marked retarding and inhibitive influence on the growth of tubercle bacilli, and that this influence prolonged over forty-eight hours entirely prevented the growth of future tubercle bacilli. The clinical results of formic aldehyde treatment were all in accord with the results of the bacteriological observations. The 6 per cent. solution was as a rule used, but this was increased or decreased according to the idiosyncrasies of the patient. In most cases the drug was inhaled once or twice a day, compressed air by a small mechanical arrangement being made to bubble through the solution. This gave the best results. In other cases in hospital practice the bib method was employed; namely, a kind of bib was devised, on which the formalin was sprinkled, and this was worn suspended from the neck so that the air taken into the lungs was constantly impregnated by the vapour. Fourteen cases were under this treatment, twelve were much benefited, while two only slightly improved; both unsuccessful cases were men, and both presented the physical signs of extensive breaking down in both lungs. Of the twelve successful cases, each of which was much improved, five were men and seven women. Dr. Murrell believes that the best way to treat tuberculous phthisis is to obtain the bacilli from the expectoration, cultivate them, pass over them various volatile substances until one is found which will arrest their growth, and then administer this by inhalation to the patient. This treatment by no means precludes the use of fatty foods and other substances such as cod-liver oil.

Professor Landerer, of Stuttgart, has published a volume of 300 pages, in which he gives his methods and results in treatment with **Cinnamic Acid**. His experiments have extended over fifteen years, and have been employed in two hundred and forty cases in the sanatorium at Leysin. He believes that cinnamic acid produces an intense phagocytosis, and causes a sclerotic condition of the tissues in the neighbourhood of the morbid process, thereby circumscribing it, and that the acid always exercises a germicidal influence upon the bacillus. He has used the cinnamate of sodium in the form of a solution or emulsion. The strength of the solution varies from 1 to 5 per cent., and the reaction is made neutral or strongly alkaline. The solution before

it is employed is filtered, and sterilised by boiling for five minutes. The formula used is as follows :—

Finely powd. Cinnamic Acid	grs. 7	Yolk of an Egg	1
Oil of Sweet Almonds	♏150	Saline Solution	7 per 1000

A sufficient quantity to make ℥iijss.

This preparation is introduced into the body by intravenous or intramuscular injections.

Landerer claims to have obtained the following results. In one hundred and ten cases of pulmonary tuberculosis of different degrees there were fifty-seven cures, twenty-six improvements, five unsuccessful cases, and twenty-two deaths. In seventy-two patients suffering from tubercular arthritis, there were fifty-nine cures, eight improvements, two unsuccessful cases and three deaths. In eighteen cases of glandular tuberculosis he had seventeen cures and one improvement. In twenty cases suffering from peritoneal tuberculosis there were sixteen cures, two deaths, and two patients in whom no change was appreciable. In five cases of urinary tuberculosis, there were three cures and two deaths. In three cases of tuberculosis of the testicle, one cure ; and in the other two cases no results were appreciable. He therefore considers that his method of treatment is really specific to a great extent.

At the meeting of the Academy of Sciences, held on February 26th, M. Hericourt and Prof. Charles Richet made a communication as to the results of their researches into the mechanism of the action of the therapeutics of **Raw Meat** in cases of tuberculosis. Cooked meat does not produce the same effect, because cooking coagulates certain albuminoid ferments. The important point, however, of the researches of these two observers concerns the active part of the meat. They separated the pulp from the muscle plasm, and have discovered that the plasma alone is active. It is the principles which are soluble in water that constitute the active portion of the meat. The question is not one of feeding or over-feeding, for the quantity of nitrogen contained in the plasma is very small, but it possesses immunising qualities analogous to those of other animal products which are injected into the veins. M. Hericourt and Prof. Richet propose to call this new method of treatment "Zomotherapy."

Dr. Irwing H. Hance[13] does not believe **Creasote** to be a specific in tubercular affections. Hence large doses are unnecessary and frequently harmful. Its reaction, he says, is upon the stomach and bowels as an anti-fermentative. Appetite and digestion are both improved, and thus the patient's general condition is bettered.

The writer's experience with the drug fully confirms these conclusions of Dr. Hance. Creasote, Dr. Hance continues, has stood the test of time, having been used by Grandjean as early as 1839. It is to-day the most widely used drug in the treatment of pulmonary tuberculosis. Creasote and whiskey, equal parts mixed in half a tumbler of water or milk, is well tolerated by the stomach. Capsules packed lightly with carbonate of bismuth will permit of 3 or 4 drops of creasote being dropped into them before being capped. Two capsules of 6 or 8 drops are used instead of crowding this amount into one capsule. He would explain to a patient how this is done, and it is more economical. Dr. Hance has used carbonate of creasote for at least five years ; he finds it to be well tolerated by the stomach, and to have given satisfactory results. Doses up to 25 drops after each meal should be given in milk or in gelatine capsules. The only objection is that this drug is expensive. When creasote is tolerated it is indicated in any form of tubercular infection, but more particularly in afebrile cases. In first and second stages where the expectoration is free, the cough is distressing, and much bronchitis exists. In febrile cases it often is valuable, but must be administered with caution.

For phthisical diarrhœa De Renzi [19] recommends :—

℞ Iodoform grs. 30 | Tannin grs. 60
M. Divide into ten powders. From 2 to 4 to be taken daily.

The "Journal des Praticiens" for March 17th quotes the following from the "Bull. pharm. de Lyon" of unnamed date :—

A hypodermic solution of **Guaiacol** and **Iodoform:**—

℞ Guaiacol grs. 75 | Olive Oil or Vaseline (sterilised)
Iodoform grs. 15 | enough to make ℥25
M.

This may be used in a daily dose of 45 grains in phthisis, pulmonary tuberculosis, and tuberculous pleurisy.

There are few conditions which appeal to the sympathies of the physician more strongly than that of advanced pulmonary tuberculosis, and there are few in which he is so powerless to help the patient materially. There comes a time, however, in the treatment when it is the duty of the physician, who, though utterly unable to restrain the progress of the disease, should use those things which will render the remaining days of life most comfortable and satisfactory to the patient and his friends, and undoubtedly, in this late and hopeless period, much can be done to relieve the suffering and discomfort.

Tincture of **Cannabis Indica**, properly used, will very frequently improve the appetite and help the general condition. A method which found some popularity in France is the use of the combination of the **Hoffman Anodyne**, extract of opium and syrup. Castel prescribes Hoffman anodyne, 6 drachms; fluid extract of opium, 5 minims; syrup of lettuce, 4 ounces; 1 or 2 teaspoonfuls or more four to eight times daily in twenty-four hours.

In those cases where the opium seems to produce nausea the following day, it may be wiser to use morphine in place of the opium, and when the morphine seems to produce disagreeable after-effects, add to the mixtures a small dose, say $\frac{1}{200}$ of a grain of **Nitro-glycerin** which, in many cases, will prevent the disagreeable after-effects of the opiate. It is claimed that this mixture tends to check night sweats, increase appetite, diminish cough and expectoration.

Dr. Herwirsch [20] calls attention to **Heroin** in cough as among the newer drugs which have appeared on the market within the past fifteen months.

Dresser and Floret [21] published their experiments with this new derivative of morphine, and stated that heroin afforded much relief from cough, and also lessened the frequency of respiration while the inspirations were prolonged; and further states that heroin has a more sedative effect than morphine, and is ten times more powerful than codeine.

Dr. Herwirsch says that heroin in doses from $\frac{1}{12}$ to $\frac{1}{6}$ of a grain, three times a day, is a very valuable addition to our materia medica in chronic bronchitis, and the cough accompanying phthisis. The drug acts well in most cases. The number of respirations of the patients taking the drug was diminished, and the drug after being taken for months does not have to be increased, and thus no drug habit is established. Heroin has no tendency to constipate like morphine, and in only one case in these experiments did drowsiness follow its administration. No headache or disorders of the stomach result from the use of heroin as is often the case with morphine. The dose is much smaller than either morphine or codeine, and very much cheaper than the latter, a great advantage if the drug has to be used for a long time as in phthisis.

REFERENCES. —[1] "Brit. Med. Jour.," Dec. 16, 1899; [2] Ibid., Jan. 3, 1900; [3] Ibid., Jan. 13, 1900; [4] "Lancet," Dec. 9, 1899; [5] Ibid., Jan. 27, 1900; [6] "Jour. Amer. Med. Assoc.," July, 1899; [7] "Brit. Med. Jour.," Jan. 20, 1900; [8] "Med. Rec.," New York, Nov. 25, 1899; [9] "New York Med. Jour.," Mar. 4, 1899; [10] "Gaz. deg. Osped.," July 30, 1899; [11] "Brit. Med. Jour.," Jan. 20, 1900; [12] "Treatment," Oct. 12, 1899; [13] "Med. Rec.," Nov. 11, 1899; [14] "Brit. Med. Jour.," Jan.

20, 1900; [15] "Berlin klin. Woch.," Oct. 13, 1899, p. 939; [16] "Münch. Med. Woch., June 13, 1899; [17] "Brit. Med. Jour.," June 28, 1900; [18] "Therap. Gaz.," Jan. 16, 1900; [19] "Riforma med." Dec. 23, 1899; [20] "Therap. Gaz.," Nov. 15, 1900; [21] "Therap. Monatsh," Sept., 1900.

PITYRIASIS.

Synopsis.—(Vol. 1900, p. 401). **Emollients**—oily rather than watery applications are best with mild **Antiseptics** and **Astringents**. **Liquor Carbonis Detergens** relieved one case and **Pilocarpine** another. **Cod-Liver Oil** is commended. Arsenic is of little use. **Antimony, Thyroid Extract** and **Quinine** in large doses have been advocated. Crocker keeps patient in bed in uniform temperature and covers skin with **Lassar's Paste** or oily application, giving nourishing diet and large doses of Quinine. Mackenzie uses **Glycerin of Subacetate of Lead**, 1 ounce; **Glycerin**, 1 ounce; **Water**, 1 pint; swathing patient in lint wetted with lotion and lying in blankets, using **Vaseline** or **Spermaceti Ointment** when redness disappears. Pringle gives **Antipyrine** in full doses. Liddell uses **Salicylate of Soda** and **Iron**. Malcolm Morris uses **Opium** for sleeplessness and pain. **Demulcent Baths** relieve.

PLAGUE.

James Cantlie, M.B., F.R.C.S.

During the year 1900 plague appeared in several parts of the world, which had never in any previous time, so far as history records, been attacked by the disease. Previous to the present pandemic, plague had never appeared south of the equator; but in Mauritius, the Cape, Madagascar, Australia, and South America, the disease has prevailed in a more or less severe form. In neither North or South America had plague ever been known until quite recently, and although in North America it is at present confined to the Chinese quarter of San Francisco, there is no guarantee of its continued limitation to that locality. The islands of the pacific have not been exempt, the Philippines and the Sandwich Islands more especially having suffered severely.

In Great Britain plague has never obtained a footing since the great plague of the sixteenth century until the autumn of 1900, when a limited outbreak occurred in Glasgow. Some six cases have been brought to the London docks, but no extension of the disease ensued. In Cardiff also a death from plague occurred, and at several ports ships with plague-stricken crews have arrived, but the disease failed to reach the shore. On the Continent of Europe, Oporto and Hamburg are the only towns in which plague deaths occurred; in the former city a limited outbreak prevailed, but in Hamburg only one case occurred—a sailor, from on board a ship from South America, who died on shore.

In Asia plague has had its chief centre in India. In the early part of 1900 the Bombay Presidency was more severely affected than any

other part of India; but during the last quarter of the year the Mysore State became the most virulently plague-stricken area. In Bengal the city of Putna has been visited by a severe epidemic, and in Calcutta plague lingers without causing any alarming mortality. In Southern China, which ever since 1894 has been an endemic centre of plague, the virulence of the disease subsided as the year 1900 advanced, and during the latter half of the year Hong-Kong, and, presumably, South China have been practically free of the disease. In Japan and Formosa plague continues to appear from time to time, but never, except in Formosa, have the outbreaks been severe.

In Africa plague has not obtained a serious hold during the recent pandemic. The outbreaks in Alexandria and Suez were never severe, and the disease did not spread to any other part of the country. In South Africa a few cases of plague have been reported, but in no instance has it spread.

In Australia plague at one time threatened to be severe; but although the disease appeared at Adelaide, Melbourne, and Brisbane, it was only at Sydney that what might be termed an outbreak occurred. In Sydney some three hundred persons were attacked by plague, of which only about one hundred died. These figures have a special significance as showing the mortality likely to ensue where a purely "white" community, living in a modern city, is attacked. Hitherto our recent knowledge of the mortality caused by plague has been chiefly derived from the effects observed upon natives of India and China. Even in these countries it was observed that Europeans escaped in a marked manner, but it was not until the city of Sydney became infected by plague that the probable effects of the disease appearing in a well-regulated, fairly-sanitary city could be gauged. Natives of Asia, died at the rate of from 60 to 90 per cent. of those attacked, but in Sydney the death rate was about 33 per cent. only.

Pestis Minor.—A great deal of discussion has centred around this ailment. Mr. Cantlie[4] draws attention to this disease and differentiates it from *Pestis Ambulans* which he regards as merely a mild type of plague and in no way to be confounded with *Pestis Minor*. Mr. Cantlie describes *Pestis Minor* as follows:—

"I will describe shortly the signs and symptoms of this non-venereal bubonic attack, which I have ventured to describe as *Pestis Minor*, as distinct from *Pestis Ambulans*. All my cases occurred in Europeans, and mostly amongst seafaring men. The patient, feeling out of sorts, comes for advice, and draws attention to a swelling in the groin. To eliminate a venereal origin is, of course, the first step. In a day or two the patient becomes feverish, disinclined for work, and

seeks his bed. The gland in the groin increases in size, the skin over it becomes discoloured, and during the second week of illness pus finds its way to the surface at one, two, or more points. A probe passed into one of the openings goes deep into the part, and may be made to protrude through one of the neighbouring openings in the skin, showing that the skin is undermined. On cutting down upon the gland, it will be found detached wholly, or except at one part; the surface is covered with pus and lymph, and when the gland is incised and inspected, it is seen to present three or four or more purulent foci, and the tissue of the gland is soft and easily broken down with the finger. The further treatment consists in removing the gland and perhaps one or two of its inflamed or suppurating neighbours, scraping out the bed in which it lies, and treating the wound by iodoform, packing with gauze, or in some such approved surgical method. During the third week the fever subsides, the wound begins to heal, and the patient by the end of the fourth week is usually fit to resume work. This is the disease I designate *Pestis Minor*, and I am anxious that this view should be the standpoint from which in future *Pestis Minor* should be discussed."

E. Klein,[2] describes the bacillus of plague as follows:—

"The bacillus is a rod-shaped bacterium of extreme minuteness (average length, 0·8μ to 1·6μ), non-motile, capable of rapid multiplication at temperatures between 15° and 40° C., best under aërobic, but also, though less readily, under anaërobic conditions. It does not form spores. It is killed by thorough drying, and by a heat of between 62° and 65° C. in ten minutes. It does not liquefy gelatin, and possesses certain well-defined cultural characters. It is highly pathogenic to man and rodents, though capable of considerable variations in its action, from a local inflammation and suppuration to a general and fatal septicæmic infection."

Dr. A. K. Chalmers[3] states that plague was first suspected in Glasgow on the 25th of August, 1900. The source of the infection has not been ascertained, but the disease broke out amongst persons who had been attending wakes held on persons who had died after only a few days' illness in a tenement on the south side of Glasgow. The steps taken in Glasgow were removal of the sick to a "plague" hospital; segregation of the contacts, speedy isolation of persons suspected of the disease and disinfection of the infected premises.

The question of the infection of rats and the suspicion of their being the means of spreading plague did not receive confirmation in the Glasgow outbreak, for no rats died of plague nor were any found with the bacillus in their blood.

Of the various prophylactics and curative agencies devised and prepared for plague, **Haffkine's Prophylactic** finds most favour. **Yersin's Serum** has also found many believers, and Calmette attributed the disappearance of the disease in Oporto to this agency.

Dr. W. J. Simpson[4] in dealing with the treatment of plague states that "the only known method attempting to deal with the problem is **Serum-therapy** and though Yersin's serum has fallen into disrepute since its failure, or comparative failure, in Bombay, yet it appears to me that it is on that system, or some allied system, that we may hope to make any advance in the treatment of plague. An explanation of the success of Yersin's serum in the few cases in China, where in twenty-one cases it gave a mortality of 7 per cent., and its failure in Bombay may possibly be due to the different methods employed in the preparation of the Chinese serum and the Bombay serum. At least that is the view of the Pasteur Institute and until it is otherwise proven may, I think, be accepted. The Chinese serum was obtained from the horse by injecting it with living and virulent cultures of the plague microbes, but owing to the dangers attendant on this method, the Bombay serum was prepared by injecting dead cultures. Of late a return in part to the original method of preparation has been made, and the serum as now supplied from the Pasteur laboratory is obtained by injecting horses, first of all with dead cultures and then with living and virulent cultures. This is the serum that was used in the recent outbreak of plague at Oporto.

"Success seems to have been more certain when the serum was used in large doses and when employed intravenously; thus the best results were obtained when, at the beginning of the illness or as soon as the patient came under observation, an intravenous injection of 20 c.c. of the serum was given followed by two subcutaneous injections of 40 c.c. each in the first twenty-four hours and by subcutaneous injection of from 10 to 20 c.c. or 40 c.c. on the next and subsequent days until the temperature fell to normal, and even for two days afterwards. No ill results ensued from these injections further than an occasional erythema and articular pains which were no more intense after the intravenous than after the subcutaneous injections."

Professors Lustig and Galeotti[5] advocate a prophylactic made of a solution of the **Nucleo-proteid** obtained from microbes grown in solid media. They sum up their treatment and its advantages as follows :—

(1,) The efficacy of our method of preventive inoculation against the plague by means of the nucleo-proteid extracted by us from the plague bacilli has been proved from the experiments made on animals —rats, rabbits, guinea-pigs, monkeys.

(2.) The immunising substance used by us is innocuous in the case of man. No troubles of any kind arise from its use, either local or general.

(3.) If the cultural liquids used in their entirety possess an immunising power, they owe this power to the nucleo-proteid which they contain and we have isolated.

(4.) The advantages of using an active substance isolated and pure in place of liquids (cultures) which contain this substance, mixed, however, with heterogeneous elements of different kinds, are at once evident.

(5.) The advantages which our method of inoculation possesses in comparison with Haffkine's method are the following :—

(*a*.) In using Haffkine's liquid, along with the active substance are injected other toxic substances which produce a reaction harmful to the organism and useless for producing immunity ; with the use of the pure nucleo-proteid prepared by us, all the reaction produced is specific and useful for the production of immunity.

(*b*.) Haffkine's liquid has a very low toxic and immunising power, since it has to undergo heating so that the active substances contained in the cultures are, to a certain extent, altered. With our method this does not take place, and the active substance retains its highest immunising power.

(*c*.) Haffkine's liquid easily becomes contaminated, and there is no guarantee of the sterility of each separate bottle, while the active substance used by us is prepared in a thoroughly sterilised condition, and is perfectly preserved in the dry state.

(*d*.) It is impossible to determine an approximate dose of Haffkine's liquid ; the nucleo-proteid prepared by us can be administered in perfectly well-defined doses.

(*e*.) By the use of our method the religious feelings of the native population of India are in no way offended.

REFERENCES.—[1] "Public Health," Dec., 1900 : [2] Ibid. ; [3] Ibid. ; [4] "Lancet," April 14. 1900 : [5] "Brit. Med. Jour.," Feb. 10, 1900.

PNEUMONIA. *Prof. H. P. Loomis, M.D., New York.*

In a paper entitled "Pneumonia, its Results and Complications," Sello[1] finds that among seven hundred and fifty cases of pneumonia treated in the urban hospital in Berlin, abscesses resulted in eleven, seven of which recovered after getting rid of pus by expectoration or external opening. There were only three cases (0·4 per cent.) of gangrene, two fatal, their expectoration being of a peculiar chocolate colour, or resembling prune juice. Induration, indicated by persistence of fever and dulness, and gradual retraction of the affected side of the

chest occurred in sixteen cases (2·1 per cent.), five being fatal. These symptoms must not be set down to tuberculosis ; when tuberculous processes succeed a pneumonia, tuberculous foci have always been pre-existent. The most frequent complication was pleurisy, serous in sixty-five (8·7 per cent.), and purulent in thirty-four (4·5 per cent.) cases. There were, as a rule, no bacteria in the serous effusion, but such were found in all but two of twenty-six purulent effusions examined, namely, pneumococci alone in fifteen, with streptococci in four ; staphylococci in two ; streptococci in two ; and both staphylococci and streptococci in one instance. Of the thirty-four empyemata fourteen were fatal ; the pus was spontaneously absorbed in two ; necropsies disclosed purulent mediastinitis in three, pericarditis in seven cases. Blood cultures (Littmann's method) gave negative results in thirty-six cases (seven of which were fatal), and positive in twelve cases (ten fatal) ; in one of the others the pneumococci in the blood led to metastatic abscesses in other organs. There were six cases of endocarditis, six of nephritis, and five of meningitis, all fatal and all due to the diplococcus pneumoniæ as proved by microscope and by culture.

William Mitchell Bruce says of the pain in acute pneumonia that it is one of the most prominent symptoms of the first forty-eight hours of the disease, and must be subdued. It should not be forgotten that the patient may die of pain, restlessness, respiratory distress, insomnia and anxiety if he is allowed to suffer severely for twenty-four hours or more ; or the strength may become so broken that the patient succumbs from bodily exhaustion. He recommends for the relief of this pain warm poultices, ice bags or leeches. If these simple measures fail morphine is to be given hypodermically. If the pain be severe when the patient is first seen, no time should be lost over other measures, but a small dose of **Morphine** should be given hypodermically, supplemented if necessary by $\frac{1}{60}$ of a grain of **Strychnine**. This will speedily cause a sense of comfort and produce a few hours' sleep the first night. He also speaks of delirium as a very grave symptom in acute pneumonia, especially when it occurs late in the disease, and believes it is often significant of alcoholism declared or secret. Assiduous attention, moral control, cold applications to the head, and cautious use of alcohol may be sufficient to control it. If these means fail **Chloral Hydrate** and **Bromide of Potassium**, 10 and 20 grains respectively, must be prescribed. It may be necessary to add morphine should these fail to give the desired result.

Caccianiga [2] has collected sixty cases of acute lobar pneumonia in which treatment by **Silver Nitrate** seemed to be clearly beneficial. Of

the sixty cases three only were fatal, the rest recovered. The dose was from 0·10 gramme in children (eight to ten years) up to 0·25 to 0·30 gramme in adults, given in pill or suspension. In cases of urgency a 0·50 per cent. solution of **Protargol** was injected hypodermically. Beyond some vomiting no ill effects were observed from the treatment either by silver nitrate or protargol. The most marked effect of the silver salt was the reduction of the temperature, which began in the first twenty-four hours and was noticed in all the cases. Apyrexia occurred by crisis in forty-eight cases, by lysis in twelve. When small doses were given apyrexia generally occurred by lysis, with larger doses by crisis. In the defervescence due to silver the pulse did not come down at the same time, but later. Resolution under the silver treatment was somewhat prolonged and unaccompanied by redux crepitation. The author is so satisfied with his results that he pleads for a more extended trial of this mode of treating acute pneumonia.

Dr. Kolipinski has had much success with **Hot Water Bags** and believes it possible to abort an attack. His method of treatment is as follows : The hot water bags should hold one gallon. They should be placed side by side on the bed, arranged so as to form a cradle for the posterior scapular region. Sufficient covering should be placed over the bags to prevent burning the patient. The external temperature of the bags should be about 110° F. The bags should be refilled every three quarters of an hour. This treatment he recommends to be continued without intermission until apyrexia has existed for several days.

He reports a series of ten patients so treated with but one death, and in this instance the treatment was not begun until the disease was fully developed and extended. Seven of these patients were sixty years of age or more.

In an interesting article Dr. Elsner, of Syracuse, emphasises several points of vital importance in the treatment of pneumonia ; first, the fact that in these patients we find almost constantly marked relaxation of the blood-vessels whereby the normal resistance of the action of the heart is removed, and it pumps vainly in an effort to fill the blood-vessels which are so widely dilated that there is not enough blood in the body to support them. He inveighs against the common use of nitro-glycerin and points out that experimental study has shown that the toxins of pneumonia cause vaso-motor relaxation or paralysis, a condition which is produced by all the nitrites and therefore the administration of nitro-glycerin simply increases the difficulty under which the patient is labouring. To overcome this condition he recommends the use of **Belladonna** or **Atropine** combined with small doses

of **Digitalis**: as, for example, 5 minims of tincture of digitalis given every six hours, and 5 to 10 minims of tincture of belladonna every three hours. If the condition of the heart is exceedingly pressing and the blood-vessels are relaxed, skin moist and covered with a clammy sweat, he administers hypodermically $\frac{1}{100}$ grain of atropine sulphate, $\frac{1}{20}$ grain of strychnine to bridge the patient over this crisis until the drugs administered by the mouth have an opportunity to act.

Backer[3] lauds **Salicylic Acid** in the treatment of pneumonia. This drug, according to him, loosens the fibrinous coagulum and causes the expectoration to lose its viscosity. He considers it a true abortive of pneumonia. To children, $1\frac{1}{2}$ grains may be given every hour or two hours. To adults, $7\frac{1}{2}$ grains every two or three hours. It is contra-indicated in cardiac affections and where there is collapse.

Sir Samuel Wilkes favours especially the use of **Opium** in the treatment of this disease. He expresses the greatest belief in its power of arresting or controlling pneumonia inflammation. He says, just as this drug alters and retards the natural functions of secretion of the body, so it tends to arrest the morbid pulmonary processes of pneumonia. He notes the remarkable circumstance of this drug being so often put aside for far poorer substitutes, many of which he believes are very depressing. He recommends opium in the form of a Dover powder, 5 grains to be given every four hours. In connection with the opium treatment he recommends the use of saline, especially Epsom salts, given every morning. His favourite method of local treatment of the disease is to keep the patient in a jacket covered with wool; this acts as a warm bath and produces local perspiration. He never applies cold to the chest, and blisters he believes are most harmful.

Dr. Hector Mackenzie, of St. Thomas's Hospital, while realising the erroneous conclusions which may be drawn from statistics merely, gives the results of a careful study of the Registrar General's report on the mortality and frequency of pneumonia as affected by age, sex and habits. Pneumonia, by its great prevalence and high rate of mortality, is a very formidable disease, though it cannot be compared with phthisis in the number of its victims during adolescence and the first half of adult life; nor with bronchitis in the number killed at the two extremes of life, but in youth and old age it claims more victims than phthisis, and at other periods more than bronchitis. It causes nearly as many deaths as enteric fever, diphtheria, small-pox, measles and scarlet fever put together; if we exclude the period of childhood the deaths from pneumonia are found to greatly out-number the deaths from all these fevers combined. He notes the high rate of mortality under the age of five, and says the steady increase of mortality after

adult life goes on to extreme old age. One of the most serious features is the heavy mortality it causes during the working period of life, especially in the male sex, and it is an important fact that while the number of people living at the different age periods steadily decreases the actual number of deaths from pneumonia steadily increases with age up to the age period between fifty and sixty, and is nearly as great between sixty and seventy as between forty and fifty. Few cases occur under the age of five, while few deaths occur after the age of twenty. The greatest number of cases occur in the spring and early summer. The period of greatest prevalence is that in which there are rapid and marked changes of temperature with cold winds. The influence of alcoholism has often been discussed in relation to pneumonia. It has not, however, been clearly proved that it makes an individual more susceptible to the disease, but it appears to diminish the chances of recovery. Cold and wet do not play such important parts in the causation of pneumonia as is popularly supposed. It is probable that cold and wet only act by temporarily depressing the vitality and its powers of resistance to the inroads of the microbe. Injury appears to act in the same way.

Dr. Hirshfeld, in an article on the treatment of pneumonia, calls attention to what may be called the prophylactic treatment, which is, he claims, very rarely taken into account. It is not an uncommon occurrence at the time of an outbreak of pneumonia for a person to come in contact with a patient suffering from the disease. It is well, he says, on this account that weak and elderly persons suffering from an attack of catarrh should avoid the sick room, and as the micro-organism of pneumonia is contained in the sputum, this should be disinfected—5 ounces of carbolic acid or a solution of $\frac{1}{1000}$ of corrosive sublimate. He has also considered the sub-serum treatment of pneumonia and concludes that with the data at present available it is difficult to arrive at a positive conclusion as to the value of the treatment; as used at the present time it has no definite effect on the course of the disease. In speaking of the general management and diet, he makes the following points. The patient should be kept as quiet as possible in a room light and airy and well ventilated at a temperature of 60 to 63 degrees. The patient should not be disturbed by frequent examinations of the chest. He should never be allowed to sit up. He should be sponged twice daily with tepid water to which toilet vinegar has been added. Feeding should be in accordance with the ordinary fever diet. He makes the point that patients are generally given too much liquid food. Large quantities of fluid are apt to produce flatulence, tympanites, and so

help the dilatation. In alcoholic subjects this is particularly true. In all cases he believes in small quantities of alcoholic stimulants on account of the caloric value. Large quantities are given only when special indications arise. He recommends two doses of **Quinine,** 5 and 10 grains each, every twenty-four hours. For the relief of the pain he recommends mustard poultices, but if the pain is severe 4 to 6 leeches are applied. If these fail to subdue the pain, morphine is given hypodermically, $\frac{1}{6}$ of a grain, and atropine $\frac{1}{100}$ gr. He does not believe in the use of antipyretics. In dyspnœa he gives tincture of digitalis combined with tincture of nux vomica to guard against cardiac failure. If a cough be present and troublesome he recommends hot water carbonate of ammonia with senega. The dyspnœa he treats according to the cause of its occurrence. If due to a large amount of lung involved, oxygen inhalations are ordered. If due to heart failure, whiskey and strychnine are given. If there is much tympanites he gives creasote or an enema of turpentine. Should there be constipation a saline aperient is given. For the insomnia he recommends trional or sulphonal in 20-grain doses. Sometimes paraldehyde in 2-drachm doses, especially in alcoholics, is ordered.

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PNEUMONIA IN CHILDREN.

Henry Dwight Chapin, M.D., New York.

Dr. D. A. Hodghead[1] advises **Belladonna** in the broncho-pneumonias of children for the following reasons : (1,) In small doses it is mildly narcotic, producing a slightly sedative influence on the nervous system ; (2,) It is in small doses a heart tonic, raising the arterial tension and increasing the circulation by stimulating the cardiac sympathetic, and in a corresponding manner depressing the pneumogastric, the inhibitory nerve ; (3.) It is a respiratory stimulant ; (4.) It produces a dilatation of the superficial capillaries, and in a corresponding manner relieves the congested lungs. It produces an increased secretion of urine and bile ; (5,) The most important action in this relation is that it diminishes secretion in the bronchial tubes and pulmonary tissues. To be effective it should be given every hour or two, in quite large doses, until the desired results are obtained.

Dr. F. C. Floeckinger[2] treats the bronchial and lung complications of measles with **Heroin**, which is administered in doses of $\frac{1}{60}$ to $\frac{1}{30}$ of a grain, according to the age of the child. A diminution of the irritating cough is noted within a short time, the respirations become more prolonged and deeper ; and on the second day an increase of

expectoration is observed. In a few cases vomiting occurred after taking the drug, but this happened only in cases where there was weakness of the stomach and disturbances of the digestive functions, and disappeared after removal of these disorders. In a few cases of broncho-pneumonia with marked irritating cough and dyspnœa, heroin was ordered in combination with salicylate of sodium. This mixture, in combination with small doses of strychnia sulphate, the author believes aided recovery.

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POTT'S DISEASE.

Robert Jones, F.R.C.S.E.
A. H. Tubby, M.S., F.R.C.S.

Obliteration of the Deformity in Pott's Disease of the Spine.—In a previous issue of the "Medical Annual" (1898) we detailed our attempts in this direction. Since that time the procedure has been extensively tried, and it has now been sufficiently long before the medical profession to warrant a critical survey of the results. In an article entitled "Forcible Correction of the Angular Deformity resulting from Spinal Caries," Drs. Bradford and Vose[1] give an analysis of six hundred and ten cases reported on by twenty-nine operators up to May, 1900. The length of time which had elapsed between the date of the operation and the date of observation of the condition of the case varied from two days to two and a half years. Twenty-one deaths had occurred in six hundred and ten cases; five were due to meningitis, four to general tuberculosis, four to trauma of the operation, three to intercurrent disease, and in five cases the cause was unstated. At the autopsies all showed a considerable local trauma and no case effectual effort at repair, although one of the cases was examined two and a half years subsequently to correction. In fifteen cases certain immediate untoward results were noted: thus seven suffered from respiratory embarrassment, six had severe pain after the operation, and in two the shock was severe. As to the effect of the operation on abscess, in eighteen cases pus was present before the operation, in four the abscess ceased to discharge, and in five pus was absorbed or the abscess ceased to discharge. In two cases an abscess appeared subsequently to the operation. On the important question of paralysis the results are distinctly gratifying. In thirty-one cases it was present before the operation and complete or partial relief occurred in seventeen. It was unrelieved in two and the result was not stated in eight: whereas partial paralysis appeared after the operation in four. With regard to the effect of the operation on the deformity, this point is distinctly stated in two hundred and twenty-

nine cases. At the time of the operation complete correction was obtained in one hundred and nineteen cases, incomplete correction in ninety-four, and there was no gain in sixteen cases. The results three months later were as follows: Of sixty-seven cases in which either complete or partial correction took place no relapse had occurred in seventeen, some relapse in forty-four, and complete relapse in five. If we survey these statistics from pathological and clinical points of view we recognise at once that the procedure has certain definite limitations. Experiments have been made on patients dying from Pott's disease by Ménard[2] and by Wullstein.[3] In Ménard's three cases a gap of 3 to 8 cm. was made between the upper and lower segments of the spine by reduction, and in one case an abscess was ruptured into the mediastinum. In no case was there any injury inflicted on the spinal cord or its membranes. In an experiment made by Von Brun on a diseased cadaver, a gap in the spine of fully 8 cm. resulted, and in a child who died forty-eight hours after forcible redressment Vulpius found a gap of several cm. in the line of the vertebral bodies where there was most destruction. Wullstein experimented on two cadavers, the first was a male aged twenty-three years who had had the disease for nineteen years and died from pyonephrosis. The kyphosis included more than half the dorsal and lumbar vertebræ. The most prominent part consisted of the spinous processes of the ninth and tenth dorsal vertebræ. Under uniform, but gradually increasing traction, most of the deformity disappeared with a crackling sound. The rest of the deformity required much direct pressure for its removal and the diastasis was then fully 9 cm. wide. In the posterior mediastinum and on both sides of the spine under the parietal pleura much blood was effused. Above and below the gap two large abscesses were found to be present but neither were ruptured during the experiment which, however, can scarcely be considered a fair test as no surgeon of any experience in the operation would dare to perform it upon a patient of that age with such an enormous deformity. The second experiment of Wullstein's was made upon a female, aged six years, who had suffered from disease for one and a quarter years with temporary paralysis of the lower extremities. Death had occurred from pulmonary tuberculosis. In the spine were two curves, one sharp in the region of the fifth and sixth dorsal vertebræ, the other not prominent in the region of the third and fourth lumbar. These were easily corrected with gentle traction. An examination showed that two gaps had been produced, one of 4 cm. at the upper site of the disease, and one of 3 cm. at the lower site. In neither case were the meninges

torn through, but they and the spinal cord were tightly stretched. An abscess about the size of a goose's egg in the right psoas muscle remained unruptured.

It is therefore evident from these experiments that in reducing a deformity a gap in the line of the bodies must be produced proportionate to the size of the deformity and the extent of the reduction, but it is satisfactory to observe that neither tearing of the meninges, and spinal cord, nor rupture of an abscess had occurred. The all-important question is that of the filling up of the gap in those patients who recover from the operation and the possibility of the maintenance of the erect position of the spine during the process. Clinical experience alone can furnish answers. Certainly in one case, alluded to by Bradford and Vose, no effectual effort at filling up the gap had taken place, but in one of our cases, a severe one, in which much of the deformity was reduced two and a half years previously, the patient was able to walk about without any support and has been doing so for some months without any return of the curvature.

The method then consists of two parts, the correction of the deformity and the maintenance of the correction; and time has shown that the means of obtaining these ends vary very much with individual surgeons. Some are content to reduce a little at a time with intervals of a month or six weeks between; others prefer to proceed more boldly. Some keep their patients recumbent during the whole period of after treatment; others permit them to walk three or four months after operation, contenting themselves with a spinal fixation apparatus. We gather from our experience that the best results can be obtained by successive attempts at the reduction of the deformity with a period of at least six weeks between; and an anæsthetic is by no means always necessary and should be avoided if possible; and that a very prolonged recumbency is essential to the maintenance of the correction. When patients are allowed to get up a spinal support must be worn in all cases.

When we wrote on the subject in the "Medical Annual," in 1898, we were convinced of these points, namely, that rectification of the deformity was not an immediate danger to life; that paraplegia did not necessarily occur by reason of the operation; and that many curvatures of the spine could be improved or obliterated by manual pressure. We felt that our early attempts upon the spine were justified, on the grounds that we had experienced in the treatment of other tubercular joints, by immediate rectification, an amount of success quite at variance with the usual teaching in this country, and only lately adopted in the United States, and further, that in the

PLATE IX.

POTT'S DISEASE.

J. R —Before operation.

J. R.—Three years after.

S. M.—Before operation.

S. M.—Three years after.

application of the plaster of Paris jacket by Sayre's method of suspension, some temporary diminution of the deformity took place without any untoward results. If, too, spinal deformity, with its immediate evil consequences upon the shape of the chest and more remote effects upon the physiology of the lungs, heart and great vessels, could be reduced, then the effect would be to increase the expectation of life in cases of Pott's disease of the spine. We knew also that the straighter a spine was made the more easily could it be fixed and controlled, and we were encouraged by the hope that pressure on the cord might be removed and paraplegia cured.

The difficulties of carrying out the treatment in any considerable number of cases we found to be great. Much physical labour and time must be expended and we had to contend with the neglect of poor parents, who allowed their children to get into an insanitary and sore state, thus occasioning delay. Some parents removed splints on their own responsibility and others, being irritated with the length of after treatment, deserted us. We mention these points as we feel that the responsibility of the surgeon in undertaking to treat hospital cases of spinal disease on these lines is great, and he should weigh well all the difficulties before commencing treatment. In private practice the results are far more encouraging, and considerable success may be expected if appropriate cases are selected.

To come more particularly to details we have divided our ninety-nine cases into two series, a first series of twenty-five cases, and a second of seventy-four, and our object in doing this is that we are able to give the results of twenty-five cases of spinal deformity who refused manual rectification and came under our observation about the time our first series was operated on and were "control" cases. Of the first series of twenty-five cases rectified, five died, four discontinued treatment, fifteen are alive and well and walking, and one is recumbent and thin. Of the five deaths, one occurred four days after the operation, and in four it was due to intercurrent disease. Four of the cases developed abscess, and one became paraplegic eight months after the operation but has since recovered. Five patients recovered from paraplegia as the immediate result of the operation, and in this particular, rectification may be looked upon as of greater value than laminectomy. In five of the twenty-five cases the curvature was practically obliterated and remains so with a spinal support, while the deformity was much lessened in ten. If we compare the twenty-five "control" cases who refused rectification with the above results we find three have died, all from tubercle, four developed abscesses, four became paraplegic, and in seven the

deformity progressed steadily. The number of our cases we have reported upon as having been operated on within the last two and a half years is ninety-nine. Of these twelve have died, but only two of them as the direct result of the operation ; others of tubercle in other organs ; fifteen patients have discontinued treatment ; forty-four are walking, some with, and some without splints : and twenty-eight are recumbent. Seventeen patients have developed abscesses, and in eleven of these the abscess has closed. This compares favourably with the 20 per cent. in patients not operated upon. Twelve patients have recovered from paraplegia, and in sixty-four the curvature has been obliterated or improved. while in sixteen no change has been effected.

If we now turn to the method we have followed, we make this remark in the first place, that in many cases, if extension be properly and simultaneously applied, much of the spinal prominence disappears, and pressure with one hand is sufficient to complete the reduction even in patients who have been walking about without support. Indeed, the expression, forcible reduction, is in many cases erroneous, as no large amount of force is necessary. We have been content to proceed by stages. obtaining a certain lessening of the prominence at one sitting, and then waiting for a month or six weeks. We have not differed in our methods in any great degree from those described in our former paper, although we tried in some cases a form of splint which, while supporting the back, shoulders, and head, allows the patient to walk about. Still we are now convinced that a splint which keeps the patient extended in the recumbent position is the proper thing.

As the result of a riper experience we come to the following conclusions : (1.) The immediate risk of the operation to life is not great, only two of ninety-nine cases having succumbed shortly after the operation ; (2,) That so far from inducing paraplegia the operation is actually a curative measure, no less than twelve of ninety-nine cases having been cured ; (3,) That the probability of abscess formation is not greater than when the spine is left untouched ; (4,) That dissemination of tubercle is quite as likely to occur if no attempt is made at rectification ; (5,) There is no risk of a flail-like spine, as the cases we showed before the Clinical Society of London abundantly proved.

We think that the operation should not be performed : (1,) In cervical and high dorsal cases, because of the difficulty of maintaining the reduction ; (2,) If ankylosis be present ; (3,) If the deformity be very large and angular ; (4,) If tubercle be present elsewhere ; (5,) In

young children under two, on account of the difficulties in nursing and keeping them clean; (6.) In adults over twenty-one; (7.) If abscess be present without paraplegia.

We think the operation is useful in the following conditions: (1.) In comparatively strong children, free from abscess and tubercle elsewhere than in the spine; (2.) Treatment should only be undertaken when the spine is yielding: (3.) Small, rapidly forming curvatures in the mid-dorsal and lumbar regions are the best to select for operation and have a good prognosis; (4.) If large rapidly forming curvatures in these regions are treated, they should be done in stages with a month's interval between; (5.) The existence of paraplegia, other things being equal, is a strong indication. We are fully convinced that the operation has very strict limitations and the cases must be selected with great care and discrimination: that personal care of the patients must be unremitting from first to last and no children should be submitted to the treatment who cannot be sure of obtaining sea or country air during the greater part of the after treatment with plenty of good food, tonics, and cod-liver oil and efficient nursing.

In conclusion, we would urge that the experience gained by the adoption of this method has taught the writers: (*a.*) That deformities of the lumbar and mid-dorsal spine can always be prevented; (*b.*) That in order to secure this end the spine should be kept in a hyper-extended position. (See *Plate IV.*)

REFERENCES.—[1] "Ann. of Surg.," vol. xxx. p. 357; [2] "Étude Prat. sur le Mal. de Pott," p. 566, Paris, 1900; [3] "Arch. f. klin. Chir.," Bd. 56, p. 485.

PREGNANCY (Disorders of).

Edward A. Ayers, A.M., M.D., New York.

Acetonuria during Pregnancy.—Rousse[1] concludes from extended investigations that acetone appears in the urine chiefly as the result of severe efforts in labour, and that it is not increased in the urine following fœtal death. His views contradict the claims made by Vicarelli and Knapp in this latter respect.

Air in the Veins.—Roger gives as conditions favouring entrance of air into the uterine circulation such as uterine distension (hydramnios), hæmorrhage and atony. He reports its occurrence in premature delivery from the vaginal douche; in version, placenta previa, and abortion. Balloons should always be filled with liquid and not air. The best treatment for the accident is oxygen inhalations with artificial respiration, venesection being sometimes employed.

Appendicitis and Labour.—Koenig summarising the literature of this subject, states that until September, 1899, nearly one hundred cases had been placed on record of pregnancy complicated with appendicitis. Gestation was affected most frequently by the recurrence of abortion. Where the pregnancy continued to full term the fœtal mortality was over 50 per cent., being due in some cases to direct intra-uterine infection of the fœtus, either by continuity, or by the blood or lymph streams.

Glycosuria and Pregnancy.—Much has been written upon questions pertaining to the presence of sugar in the urine of pregnants, with comparatively slight results of value. Guerin-Valmale[3] reported a case of marked presence of glucose in the urine persisting throughout pregnancy with albuminuria near the close, but without other symptoms of diabetes. The glycosuria disappeared between the ninth and fifteenth day after labour. As much as 1½ ounces of sugar was excreted daily for a long time.

R. von Braun-Fernwald[4] describes a new and early diagnostic of pregnancy. On palpation the two horns of the uterus are found altered in size and consistance. One feels thicker and softer than the other. The softer portion extends beyond the median line, and at its border is felt a longitudinal furrow dividing the body of the organ into two unequal parts. The thick and soft parts mark the site of the serotina. It would, no doubt, be very difficult to base a diagnosis upon so slight a palpatory sign.

REFERENCES.—[1] "Ann. de Gynéc. et d'Obstet.," March. 1900; "Hegar's Beit. z. Geb. u. Gyn.," 1900, vol. iii, No. 1: [3] "Nouv. Montp. Méd.," April 8, 1900: [4] "Wien. klin. Woch.," 1899, No. 10.

PRICKLY HEAT. *James Cantlie, M.B., F.R.C.S.*

In the prevention of prickly heat[1] too much clothing or exercise serves to aggravate the ailment, and drinking of a large quantity of fluids. Open woven cotton material is the most suitable to wear. Excessive bathing and washing with soap tend to increase the cutaneous irritation. A mixture of **Almond Oil** and **Lanolin** in the proportion of 8 to 1 should be applied to the body night and morning. Temporary relief is obtainable by lotions of **Menthol** or **Carbolic**, and along with the oily application mentioned seems to diminish the eruption and stay the disease.

F. Pearse,[2] F.R.C.S. (Bombay), considers prickly heat to be a seborrhœa. He remarks that soap removes sebaceous matter, the natural oil of the skin, from the surface of the skin, and that the sebaceous glands are unduly stimulated to produce more secretion, whilst the excessive perspiration in warm climates is also conducive to the same

end. He recommends that the application of soap in tropical countries should be limited, and that bathing should as a rule be performed with plain water.

Dr. St. Geo. Gray[3] (St. Lucia, W. Indies.) maintains that the sebaceous glands are not unduly stimulated to produce more secretion, but that the removal of the natural oils from the skin renders it more susceptible to the influence of moisture, *i.e.*, excessive perspiration, and so predisposes to prickly heat. Dr. Gray considers that woollen underclothing of the thinnest material is the best; and condemns cotton or linen being worn next the skin. Lanolin is no doubt an excellent application, but it cannot be continued for any great length of time owing to "laundry" difficulties. The only certain cure is removal to a cooler climate when the ailment disappears at once. In prickly heat the vesicles formed are really retention cysts, caused by the scarf skin becoming sodden by the perspiration. The cells of the scarf skin become swollen by the imbibition of water, and thereby block the orifices of the ducts of the sweat glands. The sweat ducts themselves become distended and give rise to the minute discrete vesicles. By wearing underclothing of wool the perspiration as fast as it is secreted is carried away, so that the epidermis never becomes sodden, and the mouths of the sweat ducts remain patulous.

REFERENCES.—[1] "Ind. Med. Rec.," Sept. 29, 1900; [2] "Jour. Trop. Med.," June, 1899; [3] Ibid., Aug., 1899.

PROLAPSUS ANI. (See "Anus.")

PROSTATE (Diseases of). *E. Hurry Fenwick, F.R.C.S.*

The Treatment of Hypertrophy of the Prostrate.—Although twenty-eight years have elapsed since Bottini[1] first (1872) introduced his method of electro-caustic incision of the prostate, it is only since the recent improvements made by Freudenberg, of Berlin, that the operation has received much attention.

Freudenberg,[2] Meyer,[3] Guiteras,[4] Morton,[5] Freeman,[6] and others, have lately testified their approval of the method, and put cases on record illustrating its use.

According to the originator, there are two classes of operations: (1,) Simple cauterisation; (2,) Incision with the cautery. The latter is the method which has been shown by experience to be of wider application.

It is claimed that this method of incision is attended with less danger and gives more uniform results than such operations as castration or prostatectomy, and further, that no general anæsthetic is required, always an important consideration in these cases.

As regards the cases suitable for the operation it may be noted that the age of the patient is apparently immaterial, and an inflamed or sacculated bladder is not a contra-indication. If purulent cystitis is present, it is better to subject the patient to a course of bladder irrigation and urinary antiseptics before proceeding to the operation. Pyelitis, according to Freudenberg and Meyer, is not to be considered a contra-indication, although, of course, the risks of any bladder operation are greater in the presence of this complication.

Fuller[7] considers that the operation cannot in any sense be looked upon as a radical one. It does not provide for vesical rest, and is not applicable to emergency cases where the catheter is no longer of use, and delay in draining the bladder means death. It is applicable, he thinks, to the less serious cases where the bladder has not yet suffered much, and no complications are present.

In discussing the structural varieties of enlarged prostate, Harrison[8] reminds us of the three prominent classes met with : (1,) The chronic engorged prostate ; (2,) The fibrous : and (3,) The adenomatous. He believes that vasectomy is most suitable for the first group, while the other two groups are better adapted for prostatectomy.

Some of the advocates of the Bottini operation believe that it is most likely to be successful in the hard fibrous form of prostate, with moderate enlargement, where the obstruction is due to a bar at the neck of the bladder, or to a ring-like enlargement of the prostate surrounding the urethra like a collar, while prostatectomy is more suitable in the cases where there is an outgrowth of glandular elements often of great size.

Willy Meyer considers that every case of uncomplicated prostatic enlargement should be subjected to the Bottini operation. He admits, however, that in patients with large, soft, easily bleeding prostates the previous ligation of the vasa deferentia is of advantage in causing shrinking of veins and reducing the danger of thrombosis and pulmonary embolism. The same author considers the danger of the operation is in reality less than that of catheter life, and advises that as soon as resort to self-catheterisation is imperative the operation should be performed. Sometimes it has been found impossible to introduce the instrument into the bladder. Guiteras experienced this difficulty four times, and thrice had to desist in his attempts. Hæmorrhage is very rarely considerable, and, in cases where it has occurred, has been readily controlled by tying in a large rubber catheter for twenty-four hours.

In one reported case a sudden movement of the patient made the blade cut through the floor of the membranous urethra into the

perineal tissues. Prostatic abscess, epididymitis, and incontinence of urine, have each followed the operation; the two principal dangers, however, are septic absorption and pulmonary embolism from widespread thrombosis.

After the operation the passage of sounds is unnecessary, as the overflow of urine is quite sufficient of itself to prevent reunion of the incisions. When successfully performed the cure is permanent.

Meyer collected the reported cases up to the present date, and shows the following results :—

In one hundred and sixty-four cases eighty were cured, forty-four much improved, twenty-six little or not improved, eight died directly or indirectly from the operation, and six died of independent causes.

Tuberculosis of the Prostate.—Urinary tuberculosis may mimic any disease of the urinary tract, but a clue can be obtained by rectal and testicular examination in a large percentage of cases from the earliest onset of symptoms. Thus in one hundred and fifty-seven male patients with urinary tuberculosis, Hurry Fenwick[9] detected a typical deposit by the finger in 58 per cent. of the cases on their first visit. This was situated as follows: In the epididymis, 21 per cent.; epididymis and prostate, 24 per cent.; prostate and seminal vesicles, 3 per cent.; prostate alone, 3 per cent.; prostate and bladder (by cystoscope) 6 per cent. In the further course of the disease, 80 per cent. finally present tangible evidence of tubercle in the lower genito-urinary organs. Tuberculous deposit is met with in the prostate under three clinical conditions. In young males who have noticed a painless, rounded, marble-sized lump in the lower end of one or other epididymis, or in young males with symptoms similar to those of stone in the bladder, or in the adult male who complains of symptoms like those of stone in the kidney. If the first case be uncomplicated by masturbation or venereal disease, and no instrument has ever been passed, there will probably be found in the corresponding lobe of the prostate an exact counterpart of this epididymal boss, partially buried in the upper or middle third of the lobe near the median sulcus. The roundish, hard body is insensitive, and the rectal mucous membrane glides over it healthily. This may, without hesitation, be diagnosed as tubercle. But if this epididymal knot become inflamed or started in an acute inflammation, such as gonorrheal or traumatic epididymitis, the prostate generally assumes a condition similar to that in the epididymis. The deposit is large, irregular and tender, and the entire prostatic lobe projects sharply in the rectum. The mucous membrane may become adherent, puckered, or even softened at one spot. The corresponding vesicle

may become affected, and a thick projecting cake forms on one side of the bladder base.

Inflamed tuberculous deposits are always the most difficult to diagnose, and one should hesitate before definitely pronouncing such a condition tuberculous. Well-marked tuberculous deposits in the prostate and vesicle may become absorbed and disappear, especially if they have been inflamed, or if the bladder has been absolutely stripped of its mucous membrane. The prostatic contour and consistence become greatly altered, the lobes become flattened, their consistence leathery, and their outlines confused, and the sulcus often deepens into a trough. The recognition of this condition is a matter of great difficulty, and only practice and observation will enable one to suspect that the prostate has been severely invaded. The nodule in the epididymis does not, however, become absorbed, and often helps to form an accurate conclusion. If tubercle has once infiltrated the prostate, it is generally relentless, and in due course it will appear in the bladder or kidneys spreading along definite tubercle routes.

The most frequent form (62 per cent.) of tubercular deposit met with in the prostate is that of an irregular knob the size of a toy marble or cherry stone, partially buried in the substance of the lobe, and easily defined. It is dense, but not stony hard. The feeling of small shot-like hardness over the prostatic surface described in text-books is rare (3 per cent.), and the massive indurations of the prostate and vesiculæ are also infrequent (15 per cent.), and are due to the addition of sepsis. More often than these (14 per cent.) the vesiculæ seminales are first implicated before the prostate.

Urinary tubercle invades the different sections of the urinary tract along certain regular highways. It commences most often in the epididymis (thirty-three in one hundred and fifty-eight), is next found in the corresponding lobe of the prostate, next in the base and around the corresponding side of the bladder, and lastly in the middle and lower third of the corresponding kidney near the pelvis. An epididymal knob sometimes short circuits to the kidney of the same side.

Sometimes the invasion turns off along one of two by-paths: one from the one prostatic lobe or vesicle to the other and down to the other testis, and the other across to the other ureter and kidney.

In 18 per cent. of cases the tubercle crosses over, and thus the right testis and left prostate or kidney may be attacked. Examination of the testis, prostate and bladder base, should always precede the employment of any instrument on forming a diagnosis in the urinary disease of an adult.

The bladder should never be washed out in cases of tubercle, even although the presence of pus in the urine may tempt one to do so.

A patient with a tuberculous bladder, which is washed out as a matter of routine, has his kidney destroyed sooner and more thoroughly than he whose bladder is left alone.

The surgical treatment of tuberculous prostate, as Mr. Watson Cheyne[10] remarks, is practically limited to cases where suppuration has taken place, and should be undertaken early before the rectum or urethra is involved. The prostate is best approached by an incision in front of the anus, transverse or curved with its convexity forwards. The tubercular cavity is scraped or packed with iodoform gauze. When rupture into the urethra has taken place the same operation is of benefit, but when a rectal communication with the abscess cavity exists, it is inadvisable. In such cases, the opening into the rectum should be enlarged, and the cavity scraped, that the wound may heal.

REFERENCES.—[1] "La Clinica Moderna," Nos. 10, 11, 16, 17, 25, 1899; [2] "Conf. Berl. klin. Woch.," 1897, p. 321; [3] "Med. Rec.," Jan. 14, 1899; [4] "New York Med. Jour.," April 29, 1899; [5] "Med. Rec.," Sept. 17, 1898; [6] Ibid., June 17, 1899; [7] Ibid., Nov. 19, 1898; [8] "Lancet," Aug. 5, 1899; [9] "Brit. Med. Jour.," Feb. 18, 1899; [10] Ibid., Dec. 30, 1899.

PRURITUS.

Synopsis.—(Vol. 1900, p. 429). **Lotions** containing **Carbolic Acid** are best (1 to 60). R Ac. Carbol. Liquef. ʒj; Liq. Potassæ, ʒss; Aq. ad ʒx. M. Ft. lot.: or R Ac. Carbol., ʒj; Sod. Biborate, ʒj; Aq. ad Oj. M. Ft. lot. **Dilute Acetic Acid** or **Vinegar**: or R Chloroformi, ʒj; Sp. Vin. Rect., ʒx, Aq. ad Oj. M. Ft. lot. R Liq. Plumb. Subacet., ʒij; Glycerini, ʒss; Aq. ad ʒx. M. R Liq. Picis Præp., ʒij; Liq. Potassæ, ʒiij; Sp. Vini Rect., ad ʒij; 2 drachms to water 1 pint for lotion. For small areas, **Ointments**, *e.g.*, R Ac. Carbol., gr. v to xxx; Ung. Zinci, ʒiv; Ung. Paraffini, ad ʒj. M. Ft. ung. **Ichthyol** is useful for inflammation: R Ichthyol, ʒss to ʒiij; Pulv. Calaminæ, ʒij; Ung. Paraffini, ad ʒj. M. Ft. ung. R Resorcini, gr. xv, ad ʒj; Zinci Oxid., ʒss; Ung. Paraffini, ad ʒj; M. Ft. ung. R Beta-Naphthol, gr. xx; Ung. Paraffini, ʒj. M. Ft. ung. **Mercury** is only used for limited areas: R Hydrarg. Ammoniat., gr. xxx; Pulv. Zinci Oleat., ʒj; Paraffini Mollis, ʒv; Paraffini Duri, ad ʒj. M. Or, R Ung. Hydrarg. Nitrat. Dil., ʒj; Ung. Paraffini, ad ʒj. Savile gives **Calcium Chloride**, gr. xx, t d. post cib. Lavallée reviews the nervines, *e.g.*, **Valerian, Bromides, Asafœtida** or **Belladonna, Aconite** and **Gelsemium Tinctures, Hamamelis, Digitalis, Ergotine, Quinine, Pilocarpine, Opium, Chloral,** etc.

For Senile Pruritus.—R Pot. Brom., ʒij; Sod. Iodid., ʒj; Sod. Salicylate, ʒij; Sod. Acetate, ʒj; Infus. Gent., ʒiv. ʒij post. cib. ex aq. Hot lotions at night, *e.g.*, Corrosive Sublimate, 1 in 2000; Carbolic Acid, 1 in 20, or Bismuth Salicylate with Powdered Starch, 10 to 20%;

or, ℞ Menthol, gr. v; Guaiacol, ℥jss; Ac. Salicyl., gr. xxx; Lanolin, ℥j; or, ℞ Ac. Carbol., ℥j; Sod. Hyposulph., ℥j; Glycerin, ℥ss; Aq. Dest., ℥x; or, Vinegar Water, ℥j; Ichthyol, ℥j; Glycerin (with or without Menthol), ℥j. M. In some cases **Pot. Permang.**, 2% solution, is useful, followed by application of **Zinc Oxide**. For small areas ℞ Menthol, gr. xxx; Alcohol, ℥vj; Ether, ℥vj; or Menthol in Chloroform to saturation. In other cases, ℞ Cherrylaurel Water, ℥ij; Chamomile Water, ℥j; Alcohol, ℥j: Chloroform, gtt. v; Corrosive Sublimate, gr. iij to iv: or ℞ Cocaine Hydrochlor., gr. xlv; Chloral, ℥j; Cherrylaurel Water, ℥ij; Aq. Dest. Oj. Parisat employs **Aperients**, a **Milk Diet** and **Benzo-Naphthol**, 2 grammes daily.

For Pruritus Ani.—**Laxatives**, hot or cold **Rectal Injections** and **Chrysarobin Suppository**, 1% before retiring. **Nitrate of Silver** locally 1 to 20 every three days. Treat any superficial ulcer with **Stretching** or **Scraping**, or apply **Eucaine** and pure **Lactic Acid**, washing rectum out with **Boric Solution** night and morning, and after defæcation.

For Scrotal Pruritus.—**Hot Corrosive Sublimate** or **Carbolic Solution** as compress.

For Vulvar Pruritus.—Chloral Hydrat., ℥j; Rose Water, ℥iij; Distilled Water, ℥iv: or ℞ Morph. Hydrochlor., gr. vj; Cherrylaurel Water, ℥j; Sodium Borate ℥ij; Chloroform Water, Oj: or ℞ Pot. Bromid., gr. xxx; Ac. Salicyl., gr. vij; Calomel, gr. vij; Glycerole Starch, ℥vj. Before retiring apply hot poultice moistened with Boric Solution or strong solution of Arg. Nit., *e.g.*, ℞ Arg. Nit., gr. xv; Distilled Water, ℥ij. **Bromide of Ammonium** with **Chloral** or **Sulphonal** and **Antipyrine** may be used for sleep. **Lysol** and **Corrosive Sublimate** injections relieve irritating vaginal discharges.

For Itching of Jaundice.—℞ Ichthyol, 2·5 to 5·0; Sp. Vin. Rect., 25; Ætheris, 25. M. Ft. lot. Apply externally.

PRURITUS ANI. (See "Anus" and "Pruritus.")

PRURITUS GENITALIS. *T. Colcott Fox, M.B.*

The genitals are to be washed with a hot solution of **Corrosive Sublimate** (1 to 1000), and the following ointment applied[1]:—

℞ Lanolin	30·0	Menthol	℥ 0·5
Zinci Oxydati			
Bismuthi Benzoici	āā 10·0		

Tuttle[2] advises that every pathological cause of pruritus should be removed, such as oxyurides, hæmorrhoids, fistula in ano, rectal ulceration, and eczema, and the local application of hot or cold water, as suits best the individual patient, preparations of **Carbolic Acid, Black Wash, Salicylic Acid, Chloral Hydrate, Chloride of Calcium, Extract of Conium, Extract of Stramonium, Camphor, Cocaine,** and **Tar** in different cases. He has found a combination of **Carbolic Acid** (10 to 20 per cent.) **Salicylic Acid** (2 to 10 per cent.), and **Boracic Acid** (5 per cent.), with **Glycerin** and **Cold Cream** of especial service. **Ichthyol** in his hands has been of value, and in association with painful conditions, conium and cocaine. For the rheumatic or

lithæmic state underlying the condition he prescribes **Nitrogenous Diet, Alkaline Diuretics, Salicin Compounds,** and **Hot Baths.**

Leredde[3] has tried **Salicylate of Methyl** (1 in 20) in the form of pomade with equal parts of **Vaseline** and **Oxide of Zinc** in pruritus and considers it has marked antipruritic qualities. Its odour is against it.

REFERENCES.—[1] Quoted by "Jour. Cut. and Gen.-Urin. Dis." from "Monats. des Harn. u. Sexual-Apparates," Funster Bd., Heft 3; [2] "New York Med. News," Jan. 27, 1900, quoted in "Brit. Med. Jour.," Epitome; [3] "Ann. de Derm. et de Syph.," Nov., 1899, p. 1000.

PSORIASIS. *T. Colcott Fox, M.B.*

Danlos[1] has found the effect of **Cacodylic Acid** very favourable. He has administered it in about sixty extensive cases of psoriasis. In fifteen to twenty days the pruritus diminishes or disappears, the redness and scales also. About one-tenth of the cases are rebellious. Cacodylic acid is less toxic than other arsenical preparations, and so can be given in larger doses. It is nearly painless in hypodermic injections. Its loses its power in the relapses of psoriasis. He administers daily to men 40 to 60 centigrammes of cacodylic acid, and to women, 30 to 40 centigrammes by the mouth; hypodermically he has not gone beyond 40 centigrammes in a day. These doses have been well borne for two months or more.

Neumann, of Vienna, in two cases gave respectively 20 injections and 30 injections of **Cacodylate of Sodium** without accident, and with some amelioration of the eruption. The dose is not mentioned.

Goldschmidt[2] has treated a number of cases of inveterate psoriasis by painting the patches daily for several days with a solution of **Eugallol** (Pyrogallol-mono-acetate) in acetone, followed in fifteen to thirty minutes by the application of a zinc paste. It stains the parts black. Eugallol has a rapid and energetic action, but produces only slight local reaction, and certainly very rarely toxic symptoms. Obviously, this treatment is most suitable for isolated inveterate patches.

REFERENCES.—[1] "Ann. de Derm.," 1897, p. 196 and 559, and Nov. 1899, p. 996; [2] "Amer. Jour. Med. Sci.," cxx., p. 118.

PULMONARY SURGERY. *Priestley Leech, M.D., F.R.C.S.*

Diagnosis of Pleural Adhesions.—Sapiejko[1] says that it is only in those patients, who are in good condition, that one can have recourse to exploratory pleurotomy or the detachment of the pleura after Tuffier's method for the diagnosis of the situation of pulmonary abscess, etc. The most important point for the surgeon to know is

the absence or presence of pleural adhesions at the spot where he wishes to operate. For this purpose he makes use of the negative pressure of the pleural cavity. He uses a simple glass tube with two bends which is filled with a physiological salt solution. If a communication be made between this tube and the pleural cavity a change in the level of the liquid takes place—the level towards the pleural end being raised and the other lowered. He used a blunt hollow needle, the opening into the needle being about half a cm. from its extremity; a small incision is made in the skin before the introduction of the needle. If the level of the liquid changes after the needle has penetrated the pleural cavity no adhesions are present. Errors may arise from the opening in the needle becoming blocked; to avoid this source of failure, the puncture must be repeated, the opening in the needle examined, and a different needle may be used. The author has tried it in animals and man with scarcely a mistake. He quotes several cases where he has used this apparatus before operation on abscess and gangrene of the lung. He has tried to cause pleural adhesions by injecting concentrated solutions of silver nitrate, of formalin, caustic potash, etc., but he has not yet concluded these experiments. He uses a scalped and not a thermo-cautery for incision of the lung. Hæmorrhage is never very great and plugging nearly always stops it. The thermo-cautery burns the walls of the wound and prevents one seeing where one is going. A small trickle of pus or a simple infiltration of the pulmonary tissue sometimes leads us to the seat of the disease in a direction different to that where the disease was at first supposed to lie; the thermo-cautery prevents us making use of these signs.

Diagnosis of Bronchiectasic Cavities by X-Rays.—Tuffier[2] draws attention to the use of radiography in the diagnosis of bronchiectasic cavities. He thinks that the fluorescent screen will reveal cavities, the diagnosis of which is impossible or uncertain from the auscultatory signs alone, and it may reveal the existence of several cavities where the surgeon only supposes there is one present. Of course this method is not an infallible means of diagnosis, but Tuffier thinks that with improvements in the apparatus this method will give better results.

REFERENCES.—[1] "Rev. de Chir.," July, 1899: [2] "Bull. et Mem. de la Soc. de Chir.," March, 1900.

PUPIL (New Phenomena in). (See "Iris.

PYO-PNEUMOTHORAX.

Synopsis.—(Vol. 1900, p. 439). Stimulants to relieve shock. Opium or Morphine for pain and nervous excitement. If dyspnœa be urgent Tapping is advised by West.

PYORRHŒA ALVEOLARIS.

Synopsis.—(Vol. 1900, p. 441). Removal of Tartar. Packing the gum pockets with Copper Sulphate, and as a mouthwash, R Ac. Carbol., mlv; Sod. Bicarb., gr. x; Pot. Chlor., gr. x; Glycerin, 5j; Aq. Menth. Pip., 5j. To be used specially before meals.

RECTUM (Disorders of). (See also "Anus.")

Herbert Wm. Allingham, F.R.C.S.

CARCINOMA OF RECTUM.

Senn[1] states that an extensive experience of Kraske's operation has convinced him that sacral resection is not only unnecessary, but absolutely harmful in all operations for malignant disease of the rectum. He holds that all legitimate and well-grounded indications for the radical removal of high rectal carcinoma can be met, and ample room for performing the operation secured, by a preliminary excision of the coccyx alone. Even this operation is regarded as superfluous in extirpation of the rectum below the peritoneal reflection. Kraske's operation, it is hoped, will soon become obsolete. The author concludes his remarks with a few words in reference to the contra-indications to a radical operation for high rectal carcinoma. He holds that such treatment is contra-indicated in all cases in which the proximal limits of the tumour are beyond the reach of the index finger, and there is extensive infection of the retro-peritoneal glands, with marked extension of the disease in the para-rectal connective tissue. In the absence of such positive contra-indications, it is held to be probable that a radical operation can be performed without sacrificing any portion of the sacrum, by limiting the resection of the posterior bony wall of the pelvis to removal of the coccyx.

Thomas Carwardine[2] says the position of the patient should be as follows. The left knee is supported on a stool, the buttocks are at a higher level than the head, and the patient is almost prone. It is important for the buttocks to be well raised, for not only is the patient better supported thus, but the bowels also tend to gravitate away from the pouch of Douglas. With this principle in view it might well be called the inverted Trendelenburg position.

Steps in the Operation.—Subperiosteal excision of the coccyx and fourth and fifth pieces of the sacrum.—A free incision is made clean down to the bone, through the middle of the periosteum. A small periosteal elevator is employed, and some patience is required. The denuded coccyx is levered out at its joint above, and afterwards the fourth and fifth pieces of the sacrum are denuded of periosteum and excised. Five minutes may be required for this stage, which leaves a

bed of periosteum, to which the sphincter ani, levator ani, and coccygeus remain attached.

Median Proctotomy.—This is rapidly accomplished by passing a long slender knife in at the anus, transfixing the periosteum above, namely, that belonging to the fourth sacral segment, and cutting quickly through everything by a sawing movement exactly in the middle line. The bleeding is not severe, and comes chiefly from the wall of the bowel; a few other arterial points require forceps. The mucous membrane may then be slit up in the middle line posteriorly. The growth and upper part of the rectum are now freely exposed, and the extent of requisite removal is easily determined; also, whether the whole circumference of the gut shall be removed, or a strip of mucous membrane left.

Isolation of the Gut below and on either Side.—The whole thickness of the gut is divided transversely with sharp scissors some distance below the growth, leaving the mucous membrane over the sphincter intact if possible. It is also completely divided on either side. As soon as the prostate level is reached, and the levator ani is divided, the separation of the rectum becomes very easy, for it is here enclosed in a tube of the recto-vesical fascia, and the direction is indicated by several longitudinal arterial branches. The peritoneum is soon seen, and is easily distinguished by its bulging, and by the movement of the gut visible beneath it. It is easily separated by getting the assistant to depress it with a sponge or finger while the operator holds the growth in his left hand, and dissects it with sharp scissors in the right hand. It should be noted that by the traction of the left hand a pocket of peritoneum may be pulled down and accidentally snipped.

Isolation of the Gut above, with the Presacral Tissue and Glands in Continuity.—At a distance of at least an inch, and well above the growth, the mucous membrane alone is divided transversely, not the whole thickness of the gut wall. This exposes the perirectal tissues, and continuous with them the presacral tissue and glands. The presacral tissue will be found to be thicker and firmer than might be expected, perhaps a third or half an inch thick, and of firm fibrous character so that it will not break away, and with numerous glands embedded in it at the posterior part.

The rectum being held firmly in the left hand, this presacral tissue is separated from the sacral periosteum and remaining part of the sacrum posteriorly up to the level of the hollow of the sacrum. Stage by stage the peritoneum is very easily depressed out of the way in front. It might be thought that the peritoneum would be closely

incorporated, but experience has shown that it is easily separated out of the way by blunt dissection with the forefinger. Herein is one of the great advantages of this inverted Trendelenburg position, for instead of opening the peritoneum, as in Kraske's method, it is simply peeled off the gut with the forefinger, the small intestine having receded. If the peritoneum should happen to be involved it may be deliberately cut away and the rest subsequently sutured, for it is here redundant, and some can easily be spared.

There is now a mass in continuity upon which traction can be exerted with the left hand, consisting of the cancerous rectum, the presacral tissues, and all the glands likely to be involved in any ordinary case. This mass can be strongly pulled upon with the hand, and completely isolated by blunt dissection with the forefinger of the other hand high up into the hollow of the sacrum. It only remains to divide the presacral tissue transversely as high as desired; for this scissors may be used. Carwardine has found a right-angled triangular, double-edged palate knife a suitable instrument for the purpose.

Union of the Gut above and below.—This may be done with confidence by means of silkworm-gut sutures.

Final Results.—A corrugated contractile anus, with a thick band of tissue behind uniting the lateral sphincters, and a bifid bony tail.

Keen[3] points out the advantages of a permanent abdominal anus, and of total closure of the sacral end of the rectum, in operations for rectal cancer. In his later operations the author has made a preliminary colotomy in the left groin and, after an interval of about a fortnight, removed the diseased portion of rectum by Kraske's method. He has taken a further step which he thinks is a distinct improvement in rectal surgery. After the removal of the rectum he has completely closed the sacral end of the gut, just as the intestine is closed before making a lateral anastomosis. The first advantage of this is that if the closure is a success, neither fæcal matter nor infected mucus can reach the wound, and there is a much better chance of obtaining primary union, and preventing a fatal result. Secondly, as the perineal wound is entirely closed, no escape of either fæces or mucus occurs after recovery, and the patient is relieved of the necessity of wearing a napkin. Thirdly, for the same reason, a prolapse is avoided.

J. M. Matthews[4] considers that the Kraske operation is not to be advised: That what is known as the high operation for the removal of cancer of the rectum is seldom justifiable: That the opening of

the peritoneal cavity in operating for cancer of the rectum is to be deprecated and should not be regarded as a "light affair": That the circular method is to be preferred in the extirpation of cancer of the rectum over the sacral method; That all malignant growths within reach of the finger and that can be circumscribed should be extirpated; That where a stricture exists, threatening total obstruction and it is not considered advisable to extirpate the growth, either colostomy should be done or the stricture should be forcibly dilated; That forcible and free dilatation of a stricture often accomplishes as much as a colostomy, and is much to be preferred; That it is questionable whether the entire rectum should ever be extirpated for cancer.

Leonard A. Bidwell,[5] says after excision of the rectum by the ordinary racket-shaped incision round the anus, make two transverse incisions about two inches long on each side of the original incision, about one inch apart; the flaps so formed are dissected up and attached by silkworm gut sutures to the cut edge of the rectum. In most cases this can be done without any tension, but should there be any, a longitudinal incision in the posterior surface of the rectum will enable the union to be effected. Finally, the posterior part of the wound is lightly plugged.

M. Quenu,[6] of Paris, would restrict the operative methods to be employed in cancer of the rectum, to the perineal, for those low down (within 8 to 10 cms. of the anus), and the abdomino-perineal for all others. Against the latter, two objections have been raised—first, the persistence of an artificial anus in the iliac fossa (in the view of the author, this is amply compensated for by the greater certainty of radical cure); and, secondly, the gravity of the operation proposed. M. Quenu maintains that, if asepsis be maintained, and the loss of blood reduced to a minimum, there is really no serious risk to life. A preliminary sigmoidostomy is carried out some days beforehand. The belly is opened in the middle line, and both internal iliac arteries are ligatured. The already existing sigmoid anus is liberated, and the bowel is completely cut across with the thermo-cautery. The cut ends are cleansed and enveloped in iodoform gauze. The upper end is then brought out in the left iliac region, and constitutes the permanent anus. The lower end is freed by dividing the meso-sigmoid and meso-rectum along the entire length of the hollow of the sacrum. It is then packed with gauze at the lower part of the pelvis. The abdominal wound is closed. The patient is then placed in the lithotomy position, and the final steps of the operation are carried out from the perineum. After plugging the anal canal, semilunar

incisions are made on either side of the anus, the levatores ani are divided, the anterior wall of the rectum is carefully liberated, the pouch of Douglas is opened, the remaining connections are divided, and the diseased segment of bowel (along with the gauze stuffing in the pelvis) is brought out of the wound and removed. In two cases in which the author carried out the above operation successfully, "there was not the slightest shock"—a fact which was corroborated by M. Nelaton[7] who was present.

W. Liermann[8] says that the great advantage of the vaginal route in operations for cancer of the rectum lies in the possibility of plainly seeing every step of the operation, while in the sacral route dissection of the anterior surface must be done more or less blindly, necessitating too free use of blunt dissection, thereby endangering the vitality of the bowel. The vaginal method gives a clear view of the peritoneal fold, should it be necessary to enter that cavity. Moreover, its closure by sutures is quite simple, but the same cannot be said of the sacral method. If the process has attacked the vaginal wall, no further method is needed to deal with this condition than is employed to approach the rectum.

The operation is done in the lithotomy position, and the hips are not elevated, unless there is a prolapse of the intestines, which cannot be held back by gauze pads. The rectum is first packed with gauze. The vaginal walls are retracted to either side by long narrow specula. An incision is made in the median line, beginning just under the cervix, and carried down to the vaginal outlet. The incision is now carried down to the rectal wall, the cut surfaces being still more retracted. An incision is then carried from both angles of the wound towards the upper pole of the anus, and the latter separated by a semicircular incision from either side. The two incisions meet below in the median line, and are continued down to the coccyx. The rectum is freed on its anterior surface, the anus seized by forceps, and by making suitable traction on this the bowel is made free on its lateral aspects, and the peritoneal reflection opened. Drawing the gut well forward, it is freed posteriorly chiefly by blunt dissection. The rectum is now quite free, can be drawn well upon the symphysis and in either direction, allowing of very free access for all manœuvres, and easy closure of the peritoneum. The vaginal incision is now sutured, and the perineum likewise with deep sutures. The rectum is rotated twice on its axis, and secured in this position by sutures passing through the muscular coat and into the skin, and the distal portion cut off, then further suturing of the mucous membrane to the skin.

Stenosis of Rectum.

Entero-plastic Operation to overcome or prevent Stenosis, with especial reference to the Spur in Preternatural Anus.—Christian Fenger[9] says the principle of overcoming stenosis of a canal by transverse union of a longitudinal incision, as applied by Heinecke-Mikulicz on the pylorus and by him on the ureter, is applicable in any portion of the intestinal tract below the duodenum wherever the mechanical conditions will permit.

The longitudinal incision or opening should be made in the middle of the convex surface—that is, equidistant from the two sides of the mesentery, so as not to interrupt blood-supply by the division of large vessels in the intestinal wall. Free mobility of the loops of intestine and intact peritoneal covering are desirable conditions, but the latter is not absolutely necessary. In places where the intestine has no mesentery and where there is a limit to the infolding or bringing into apposition of the convex surface or the surface of the intestine opposite the mesentery, as the cæcum, extra-peritoneal border of the rectum or flexures of the colon, there is a limit to the length of the longitudinal incision. In an organ so free and movable as the small intestine, there is no reason why the convex surface should not be united to an extent of five or six inches, or more, if this would be desirable. In fact, there is no other limit than that of the length of the mesentery, the time required for suturing, and the length of the wound. It is evident that the length of the longitudinal wound should not be unnecessarily great.

When there is no mesentery, and consequently only slight mobility, for folding in or apposition of the convex free surface of the intestine, or where the mobility is diminished or lost by diffuse inseparable adhesions, there is, of course, a limitation to the application of this principle.

Tumours of Rectum.

W. Bodenhamer[10] says all pedicellated or pedunculated tumours of the rectum should always be removed by the ligature; the pedicle being ligated, the tumour, if large, should then be excised. The smaller tumours immediately above and at the anal margin should be removed by the scissors or the knife. When fibromata of the rectum co-exist with anal fissure, as they often do, they should be removed immediately at or after the dilatation of the sphincters, under ether, for the cure of the fissure, thus curing both affections at the same time. It is proper here to say that the pedicle in some of the pedicellated tumours of the rectum is slender, delicate, or friable; hence care must be observed in the manipulation of ligating it, lest it be broken, and hæmorrhage or other trouble should follow.

This is more especially true, however, of such growths in children. The writer on one occasion, in attempting to ligate a rectal adenoma in a boy three years old, in tightening the ligature severed the pedicle and a considerable hæmorrhage occurred, but the best results followed. The neoplasms of the rectum are sometimes detached by the efforts at stool, and a spontaneous cure is the result. The tumour, being protruded, may be separated from its adhesion by the action of the sphincter muscles, or it may become detached by rupture of its pedicle during the passage of indurated fæces.

Polypus of Rectum.—W. Bodenhamer [11] says the tumours and other affections of the rectum and anus which most resemble and are most liable to be confounded with the recto-anal neoplasms or polypi are hæmorrhoidal tumours, procidentia recti, circum-anal excrescences or vegetations, whether venereal or not, and dysentery. The adenomatous variety of the rectal neoplasm is distinguished from the hæmorrhoidal tumour by its long pedicle and pyriform shape: its smooth surface; its soft, delicate, and elastic feel; its pale red colour, resembling in this respect mucous membrane; its incapability of sudden erection or collapse; its freedom generally from periodical paroxysms of irritation, inflammation, sensibility and pain; and by its slow development. From prolapsus recti it may be distinguished, if noticed, by the fæces always passing out at the anus by the side of the polypus; whereas, in prolapsus, the opening through which the fæces are discharged will be observed to be in the centre of the prolapse. Bleeding from the anus in children is almost always a sign of a concealed adenoma, which has not yet appeared externally, but when it is protruded it is of a bright-red colour, and looks like a ripe cherry deprived of its thin epidermis; and in consequence of its appearance it is often confounded with prolapsus recti. Adenomata are by no means uncommon in children. In all ambiguous cases of rectal neoplasm, in which no tumour protrudes or can be extruded, the finger, speculum, and anæsthesia, as most important adjuvants, must not be omitted in making a diagnosis.

Ulcer of Rectum.

F. C. Wallis [12] says the method he has adopted with these ulcers is to stretch the sphincter well, scrape the margin of the ulcer with a spoon, and sometimes to treat it as he would a fissure; that is to say, divide right through the external sphincter and the base of the ulcer, and continue the incision backwards for an inch outside the anal margin. It gives a free drain to everything, and relieves the whole of the tension to these parts, and allows them to granulate up from the bottom. Under these circumstances the patient does get

well, and thoroughly well; he gets quit of the whole thing, and is a different individual. But if he cannot lie up what is to be done? The following course should be adopted though it is not so effective as that just described. The patient should be seen twice or thrice a week. Then a speculum is passed into the bowel, and a 4 per cent. solution of eucaine is injected or washed over the part so as to render it fairly anæsthetic; then some pure lactic acid is applied on some cotton wool, and the lactic acid is smeared round the ulcer. The surface of the ulcer then turns a brownish-black colour owing to the action of the acid. Having done this, any superfluity of the acid is wiped away with dry cotton wool. The speculum is now withdrawn, and the procedure is finished. The patient himself washes his rectum out, and injects a couple of ounces of fluid, such as a weak boric acid solution, night and morning, and after the bowels have acted. One of the preparations Mr. Wallis uses as a lotion is a form of peroxide of hydrogen, which goes by the name of **Oxydal.** This substance applied for a time is very useful.

Wounds of Rectum.

Quenu[13] points out that in cases of wound of the rectum it is very important with regard to prognosis and treatment to determine as soon as possible whether the abdominal cavity has or has not been penetrated. To a collection of thirty five previously recorded cases of penetrating wound of the peritoneal portion of the rectum, this surgeon adds one under his own care in which laparotomy was performed with good results. Notwithstanding the facilities afforded by the use of the rectoscope in exploration of the rectum, it is very difficult to make out whether the wound has penetrated or not, especially if the examination be made soon after the receipt of the injury, and before there are any indications of abdominal mischief. The author advocates laparotomy both in cases in which there can be no doubt as to penetration, and also in doubtful cases in which there are some signs of commencing peritonitis. In six of the thirty-six collected cases laparotomy was performed four times with success, twice with fatal results, the mortality being thus 33·3 per cent. Of twenty-nine patients on whom laparotomy was not performed, twenty-four died, the mortality being 82 per cent.

In describing the details of his treatment of a wound extending from the rectum into the peritoneal cavity, Quenu insists on the importance of prompt laparotomy, of elevation of the patient's pelvis during the operation on an inclined table, of free exposure of the interior of the pelvis by upward displacement of the small intestines,

of careful examination of the bladder and sigmoid flexure, which might also be involved in the injury, and of prolonged and thorough cleansing of the abdominal lining and contents by warm artificial serum. The duration of the operation and the chief difficulty will, as a rule, vary according to the seat of the penetrating wound. Whilst such a wound of the sigmoid flexure may be readily and speedily closed by a double row of sutures, it will be found a very laborious task to reach and close an opening situated at the bottom of the recto-vesical pouch. Much of this difficulty, it is thought, might be overcome by elevation of the anterior wall of the rectum by means of a carefully distended elastic bag.

G. H. Makins [14] says that accidental wounds may affect the rectum alone or may be complications of other injuries. By far the greater number of those falling into the first category are due to the accidental, or unskilful passage of foreign bodies into the lumen of the bowel. Into the second category come wounds of the rectum complicating fractures of the pelvis; these are rare, and as they are usually accompanied by very severe comminution of the bones they often form only a minor element in a fatal accident. The gravity of the complication is, moreover, somewhat increased by the fact that no definite symptoms may point to it in the earliest stages of the case, so that it may readily be overlooked. In this respect, particularly, it is to be regarded as a more serious matter than a similar injury to the urethra. The rectum alone or together with other organs may be perforated in a gunshot wound of the pelvis. As a very rare occurrence the rectum has been known to rupture spontaneously in the passage of hard fæcal masses and also to give way above a stricture as a result of prior ulceration. The latter event, however, is more often followed by the formation of a local abscess than by widespread trouble. Cases are also on record in which the bowel from long standing prolapse has formed a hernial pouch in which a portion of the small intestine habitually lodges. As the result of strain such a pouch has been known to rupture and allow the extrusion of the contained intestine, an accident occasionally happening to ordinary external herniæ.

REFERENCES.—[1] "Philad. Med. Jour.," Sept. 30, 1899; [2] "Brit. Med. Jour.," Oct. 28, 1899; [3] "Jour. Amer. Med. Assoc.," 1898; [4] "New York Med. Jour.," June 11, 1898; [5] "Brit. Med. Jour.," Oct. 21, 1899; [6] "Ed. Med. Jour.," Nov., 1898; [7] "Rev. de Chir.," Paris, Aug. 10, 1898; [8] "Ann. Surg.," 1899; [9] "Amer. Med. Jour.," April, 1899; [10] "New York Med. Jour.," Aug. 10. 1898; [11] Ibid.," Aug. 20, 1898; [12] "Clin. Jour.," Jan. 11, 1899; [13] "Rev. de Chir.," Jan., 1899; [14] "Lancet," Oct. 28. 1899.

RETINA. *F. Richardson Cross, M.B., F.R.C.S.*

West[1] distinguishes two forms of retinitis albuminurica. The one he considers to be of an exudative inflammatory type, probably of toxic origin, and related rather to the cellular degeneration found in the kidney, than to the fibrosis. The changes are widespread and extreme, and closely resemble those seen in other forms of acute neuro-retinitis. This exudative form occurs more frequently in parenchymatous nephritis, and is merely an interesting by-phenomenon, as the diagnosis of the renal disease is obvious without the aid of the ophthalmoscope.

In the other or degenerative form the lesions consist in white patches and hæmorrhages. The patches may be of two kinds, either (*a*,) bright spots due to degeneration, and glistening from the presence in them of minutely refractive oil drops or cholesterin crystals, or (*b*,) spots less sharply defined and less glistening, but more woolly in appearance due to exudation merely. The former develop slowly and are permanent, but the latter may come and go rapidly. Both are preceded by and result from still earlier changes in the vessels. The recognition of the presence of either form of white spot is of distinct diagnostic value in granular kidney, as the existence of this disease may be doubtful or altogether overlooked until the spots are discovered.

In conclusion West says that the two forms of the disease stand in strong contrast to each other in the following respects :—

(1,) The form of disease with which they are usually associated—the degenerative with granular kidney ; the exudative especially with parenchymatous nephritis.

(2,) Their nature and cause — the exudative being inflammatory and probably toxic in origin ; the degenerative consequent on vascular changes and more or less mechanical in origin.

(3,) Their effect on vision—the exudative, even in the extreme forms, may recover, with little or no defect of sight, but with the degenerative, if there is impairment of sight, it is usually progressive.

(4,) Their diagnostic value—the exudative being an interesting by-phenomenon of chronic parenchymatous nephritis, an affection the existence of which is obvious enough, while the degenerative often makes the diagnosis certain in cases of granular kidney which are otherwise obscure.

(5,) Their risk to life—both indicate a grave form of renal disease which may of itself prove fatal, but the degenerative form is further complicated by general arterial disease.

REFERENCES.—[1] "Brit. Med. Jour.," Oct. 28, 1899 ; "Lancet," Aug. 19, 1899.

RHEUMATISM. [*Editorial.*

C. O. Hawthorne[1] contributes an interesting and important article on the existence of rheumatic fever without arthritis. He says: "The question may be asked whether there are any circumstances which will account for the existence of fever without explanatory physical signs, and the object of this paper is to suggest that rheumatism is such a condition. At first sight that suggestion seems a somewhat extraordinary one. The experience is so frequent that there exists an apparent parallelism between the extent and severity of the polyarthritis and the range of the febrile movement; and so usual is it to note the associated subsidence of the two series of events, with, not uncommonly, their subsequent return together, that one might well be excused when the question is raised for answering off-hand, as it were, that the febrile disturbance depends upon and is determined by the severity of the arthritis, it being an undoubted fact that a local inflammatory condition frequently is responsible for upsetting the normal temperature equilibrium. But merely a moment's consideration is sufficient to show the necessity for admitting that even if the degree of the polyarthritis and the height of the pyrexial curve afford an absolute correspondence, it is still as reasonable to regard them as dependent upon a common cause and equally responsive to that cause, as to hold that one is the result and issue of the other. The simple fact that two series of events execute their movement *pari passu* is of course no proof that their relations are those of cause and effect. And taking the above statements in reference to acute rheumatism as absolutely accurate, it may as justifiably be argued that the severity of the fever determines the intensity and distribution of the synovitis as that the acuteness of the synovitis is the cause and measure of the fever. Either one or other proposition can be stated in harmony with the facts as now accepted, and though general experience inclines us to rest an interpretation of pyrexia upon local inflammation when this exists, the very opposite thesis in relation to rheumatic fever was maintained some years ago by no less an authority than Dr. Budd.[2]

"Graves[3] seems to have been the first authority to announce this doctrine. He observed in several instances that patients who at an earlier date had suffered from articular rheumatism developed 'attacks of fever which in intensity, duration, and every other particular, were identical with their former fevers, save and except that from beginning to end not a single joint was inflamed.' On the basis of this experience he maintains the proposition that 'as arthritis may exist without rheumatic fever, so rheumatic fever may exist without arthritis.'

Todd[4] also deals with this question, and referring to the cases related by Graves says: 'I have not met with such cases, but I have frequently been struck with the disproportion of the intensity of the articular affection to that of the fever, the former being trifling in amount, whilst the latter was of great intensity.' He holds to the view that the articular swellings and the febrile movement are the result of a common cause, viz., the presence in the blood of a particular morbid element. Sir Thomas Watson[5] was of opinion that rheumatic fever 'may sometimes run its whole course without any manifest affection of the joints.' Taylor,[6] in a most interesting paper published in 1845, in arguing from cases quoted in detail for the occurrence of rheumatic pericarditis without inflammation of the joints, remarks, 'This opinion implies the possibility of rheumatic fever without arthritis, and is supported by the facts which support the latter opinion.'

"Fuller[7] also upholds this view; 'in certain instances,' he says, 'it (the rheumatic poison) may excite the peculiar train of symptoms whereby rheumatic fever is characterised without producing from first to last the slightest concurrent local inflammation, whether of the joints, or of the heart, or of any other organ.'

"Charcot,[8] too, though less confident on the point, concludes that on the whole experience seems to justify the view of Graves, Todd, and Fuller, that the fever in rheumatism is primary and not secondary."

Dr. Hawthorne does not mention the extended clinical investigations made by Dr. Percy Wilde[9] on this point. He demonstrates that fever due to the poison of rheumatic fever is a much commoner disorder than acute rheumatism itself, and that the very diagnostic symptom in such cases is the acid reaction of the skin. He shows that in normal cases the skin reaction becomes normal about twelve hours before the fever abates, that in such cases convalescence is rapid, that if the fever abates before the acid reaction diminishes, there will be prolonged convalescence and danger of relapse. He applies the term "acute asthenoxia" to this condition. (See "Medical Annual," vol. 1894, p. 96.) He holds also that chronic asthenoxia (an acid condition of the tissue without fever or joint symptoms) is one of the most common disorders, that such a condition precedes rheumatic fever by months or years, and that fever is the natural cure of the condition. He is therefore opposed to the use of salicylates and antipyretics in rheumatism and employs methods for artificially raising the temperature of the body. The result of such treatment is that the patient is in better health after the attack of rheumatic fever than before, and heart complications are rare.

In a paper read before the Chelsea Clinical Society Dr. W. Ewart[1] presented the following clinical classification, showing transitional varieties of rheumatism :—

(1,) Chronic rheumatoid arthritis	Subvariety	(*a*) with symmetrical, permanent, incurable deformity
	,,	(*b*) with symmetrical deformity capable of some degree of recovery
(2,) Acute and subacute rheumatoid arthritis	,,	(*c*) distinctly "rheumatoid"; heart not affected
	,,	(*d*) "rheumatoid" in the local persistence of its joint lesions, and "rheumatic" in its heart lesions
(3,) Acute symmetrical rheumatic arthritis	,,	(*e*) with persistent and refractory joint mischief (a rheumatoid feature) with or without heart lesion
	,,	(*f*) with transient joint mischief, and no permanent heart lesion
	,,	(*g*) with permanent heart lesion and transient joint mischief
(4,) Acute cardiac rheumatism without arthritis ("juvenile" type)	,,	(*h*) joint pains only (usually bilateral) with cardiac lesion
	,,	(*i*) febris rheumatica sine arthritide
(5,) Acute rheumatic polyarthritis	,,	(*j*) polyarthritis without heart lesion
	,,	(*k*) polyarthritis with heart lesion
	,,	(*l*) hyperpyrexia and various acute complications

The group polyarthritis has a subvariety (*j*) without heart lesions. This immunity has been specially noted in some of the most acute rheumatic attacks, whilst valvulitis occurs chiefly in Group IV from subacute and almost latent attacks in the young.

Dr. Ewart considers that whether with or without salicylates alkalies should never be omitted. The potassium salts are preferable, and for reasons stated the citrate may be largely substituted for the bicarbonate. Both the alkaline and salicylate treatment should be continued with diminishing frequency of administration for two or more weeks after the cessation of joint symptoms, and the urine kept alkaline during convalescence partly through the agency of diet. As the salicylate is diminished, quinine, which may be needed from the first, is added or increased.

The iodides of potassium and of sodium, of undoubted service in acute rheumatoid arthritis, are likely to be useful in some of the "symmetrical" rheumatic cases included in the subvariety when the skin is sufficiently tolerant. Dr. Caton prescribes them in acute rheumatism with repeated vesication over the chest, for the prevention

and cure of endocarditis. They are specially recommended by the influence which they exercise upon the lymphatic system on the one hand, upon the blood on the other. Iodide of potassium has been credited with a power to consolidate aneurysms. In his own cases, after considerable doses taken continuously for many months no clotting was found within the sac. The real tendency of the iodide is, he thinks, to lower the coagulability in spite of the favouring influence of a diseased arterial surface, and he expects good results from it in a disease where the absence of clotting is the great end to be secured.

Both in the rheumatoid cases and in the allied rheumatic cases the sodium salt would probably prove less depressant and more satisfactory in the result. During convalescence iron is not tolerated unless associated with adequate purgation, and alcohol is not needed in average cases.

Acute polyarthritis, with its pain and discomfort, needs attention to the varied requirements of individual cases. The heart being concerned gastric inflation should be guarded against and relieved.

A totally different treatment, so far as Dr. Ewart has observed, is called for in the monarthritic acute rheumatic attacks.

The Local Treatment for Arthritis and the Constitutional Treatment for Rheumatism.

The Treatment of Acute Monarthritis.—When drugs entirely fail the tendency is usually to localisation, and the primary indication is to treat the joint (by splint and bandage, elevation, leeches or blisters, inunctions, and graduated pressure), the next being internal support in the chief line of weakness by quinine, nerve tonics, or stomachics. Mild salines are wanted, but salicylates and strong alkalies are worse than useless.

The Treatment of the "Acute Rheumatoid" and of the "Symmetrical Rheumatic" Attacks.—Here there is localisation, and local treatment is needed, though of a different kind. Many, though not all, of these inveterate or relapsing pyrexial cases are made worse by continued rest, in spite of salicylates and alkalies, and are curable by movement and by a supporting treatment, after the acute swelling and pain have been subdued by Esmarch's ice applications or ice massage. Surgical treatment has been advocated and practised by Dr. O'Connor, of Buenos Ayres.

The cases in Group III most need an adjustment between the local and the constitutional treatment. Instead of dealing with an unyielding attack by increasing and oppressive doses of salicylates, we should

trust to the milder alkalines or to iodides and blisters to protect the heart, in association with quinine, nerve tonics, or stomachics, as each case will suggest. The local measures may include tentatively leeching, blistering, ice massage, bandages, or splints.

Diet.—An opinion may be ventured that rheumatism is in part a dietetic disease, and that in its wide range of varieties the "feeding" plan finds application as well as the "starving" plan.

In rheumatic fever the diet at first cannot be too light. Meat and beef-teas have been held detrimental as a source of lactic acid, and milk only prescribed. A milk diet does not agree with all, and in some it may keep up the acidity and the rheumatism, for there is evidence that fermentation is set up in the stomach as well as on the tongue, and this may be another source of gastric distension in rheumatic fever. A small dose of salt (15 grains to the half pint) with, or added to, the milk, has been tried with success in these cases. In adults salt is an indispensable adjunct in all cases of long-continued exclusive milk diet, and the same method succeeds in those infants who fail to digest, and are supposed to be intolerant of, milk. In Dr. Burney Yeo's "Manual of Medical Treatment" he has recommended a salted alkaline milk drink in acute rheumatism.

It seems also that a temporary vegetarian diet is as much indicated by the rheumatic state as the avoidance of animal food, and that as the recovery of slow and refractory cases must be dependent upon a supply of suitable food, the administration of soups made of a variety of vegetables, may furnish the food as well as in part the medicine required. Whilst meat renders urine acid, vegetables render it alkaline, and this is the result at which we aim.

In the discussion[11] on Dr. Ewart's paper the necessity of rest was strongly insisted upon because of the danger which exists that serious damage may be done to the heart. Dr. Maclagan said that inflammation in the valves of the heart is very slow to subside, and it is not a mere surface inflammation but affects the fibrous texture of the valves which are ever in function. These valves, of course, can have no rest even when the patient is kept flat on his back, but if he is permitted to sit up in bed, or to get upon his feet and exercise too soon after the outward manifestations of the disease have passed by, there is always grave danger of serious change taking place in the valves. In other words, it is possible for a very faint murmur to be present during the articular manifestations of the disease. This murmur may even disappear as the patient seems to improve in health. If, however, he is allowed to exercise too early, it is perfectly possible for slow fibrous changes to take place in the

valve with consequent shrivelling and the final development of serious valvular lesions due to a deforming valvulitis.

Sir Douglas Powell quoted Sir William Jenner as stating in regard to rheumatism in children that "children do not grow out of heart disease ; they grow into it." In other words, changes in the valves have a tendency to progressively go on from bad to worse, instead of improving, as with many other lesions complicating acute disease in early or adult life. Therefore, in children in particular, rest in bed for a number of weeks after the articular symptoms disappear is an exceedingly valuable measure, which should be instituted in nearly every instance. This is the more important since under the use of the salicylates it is by no means uncommon to have the patient partially or entirely recover from the articular manifestations. But it is a well known fact that the salicylates do not, unfortunately, affect the valves of the heart in a similarly favourable manner, and for this reason, while the patient may be cured or relieved of his joint symptoms, he is, so far as his heart is concerned, no better prepared for exercise than if his joints were still painful and inflamed. Sir Douglas Powell also pointed out that the two most grave cardiac affections of rheumatic origin are mitral stenosis and aortic regurgitation. These valvular lesions are scarcely ever met with in primary rheumatic illnesses, but they are almost always found in those cases which have left the hospital after a primary attack of acute rheumatism, and have returned some months later. These lesions are the consequences of slow deforming valvulitis, from which the patients cannot entirely recover at the time they are permitted to get out of bed and move about. In Sir Douglas's opinion, primary endocarditis of rheumatic origin is a curable disease in a large number of cases, if taken in time, and if the patient is retained at rest a sufficient time to allow the valves to make recovery before the extra strain of functions under exercise is put upon them.

Dr. Caton [12] recommended : (1,) Absolute rest in bed for several weeks ; (2,) The application of a series of blisters, in size somewhat less than a florin, one at a time, in the course of the first, second, third, and fourth dorsal nerves ; after each blister a small poultice was applied ; (3,) Sodium or potassium iodide in 8 or 10-grain doses was given thrice daily ; in some cases small doses of mercury. The object of the rest in bed was to protect as far as possible the softened and weakened valve cusps from pressure. The object of the blisters was to stimulate the trophic nerves of the heart through the sensory filaments of its related skin area, and so to hasten repair and absorption, just as the reparative process in a joint was unquestionably stimulated by

blistering the adjacent skin. The purpose of the iodides or mercury was to help absorption of the, at first, imperfectly organised inflammatory products in the cusps and endocardium. The treatment was of use only if commenced within the first two or three weeks. In long-standing cases it was absolutely useless.

In respect to the use of **Salicylate of Soda** Sir F. J. Maclagan [13] says salicin is a bitter principle derived from the bark of the willow. It is a bitter tonic resembling quinine in taste and appearance and may usefully be prescribed as a bitter tonic in suitable doses quite apart from its anti-rheumatic action. It has none of the depressing action on the heart and on the nervous system which are so frequently found to follow the administration of salicylate of soda. On account of this depressing effect he, like every other observer, has frequently had to stop the use of the salicylates ; he has never had to give up salicin.

The following is recommended [14] for acute rheumatism : An ointment composed of liquid vaseline 1 ounce, salicylate of methyl ½ ounce ; this is smeared upon lint and bound about the joint, and the lint is now in turn covered with gutta percha. In other cases an ointment composed of salicylic acid, as follows, may be used :—

R	Vaseline	1 ounce	Salicylic Acid	45 grains

In still other instances salicylic acid can be used as follows :—

R	Salicylic Acid	1 drachm	Extract of Belladonna	15 grains
	Salicylate of Sodium,	60 grs.	Vaseline	1 ounce

This is applied in the same way as the ointment of the salicylate of methyl.

Salol is said to be especially useful in gonorrhœal rheumatism. It may be dissolved in ether and used in the following prescription :—

R	Salol	1 drachm	Ether	1 drachm
	Menthol	30 grains	Lanolin	1 ounce

Guaiacol when locally applied is also a powerful pain reliever as well as an antipyretic.

Ice Massage.—Dr. Wm. Ewart [15] describes a case of severe pain in hip, when hot air baths and other forms of heat had failed to relieve what was at once remedied by friction over the painful parts by means of a block of ice held in the hands by a piece of flannel. In another case described as acute rheumatoid arthritis, great relief was obtained by placing an ice bag on the knee and instep and maintained continuously.

Dr. Kinnear, of New York, has also recorded excellent results from the use of a **Spinal Ice Bag** in chronic rheumatism and lumbago.

Monbonoff [16] claims that **Electric Light** has a direct effect upon the

inflammatory conditions of rheumatic joints, quite apart from the question of heat. He says: "This effect persists for a period varying from a few hours to two days. If the treatment is prolonged the pain permanently ceases. Under the influence of the electric rays the articular exudations which are present in rheumatic affections and in serous affections of the pleuræ disappear. The same thing takes place in the œdema of gouty affections. Relapse, however, sometimes occurs. The electric light has a certain influence in reducing temperature. The light of the electric arc (20 to 25 ampéres and 50 to 60 volts) is sufficient to cure affections of rheumatic character and certain diseases of the skin." The author thinks that the electric light will unquestionably occupy an important place in the therapeutic arsenal. At present, however, it must be used with precaution, as it is not altogether free from danger. A. G. Minime [17] reports several cases in which he employed a 16 candle-power incandescent light in the treatment of joint affections—such as acute articular rheumatism, acute synovitis, etc.—and also in hæmatomata, torticollis, and neuralgia. He uses a combination of massage and illumination of the part. Absorption of large hæmatomata was effected in three sittings. Small effusions of blood were absorbed after fifteen or twenty minutes' treatment. In a case of acute traumatic synovitis of the elbow, the effusion disappeared in seven sittings. Ivanoff has devised a special lamp which is a combination massage roller and electric lamp.

REFERENCES.—[1] "Pract.," Sept. 1899; [2] "Med. Chir. Trans.," vol. xxxviii, article by Dr. J. Taylor; [3] "Clin. Med.," vol. ii, p. 182; [4] "Practical Remarks on Gout," etc., p. 125; [5] "Principle and Practice of Physic," p. 740; [6] "Med.-Chir. Trans.," vol. xxviii, p. 520; [7] "On Rheumatism," etc. p. 30; [8] Lectures on Senile Disease, p. 158; [9] "Rheumatism: Its Cause, Prevention and Cure" (J. Wright & Co.); [10] "Brit. Med. Jour," March 17, 1900; [11] "Therap. Gaz.," July 15, 1900; [12] Ibid.; [13] "Lancet," April 14, 1900; [14] "La Presse Médicale," Feb. 1898; [15] "Lancet," April 8, 1899; [16] "Vratch," No. 6, 1900; Epitome "Brit. Med. Jour.," July 1, 1900; [17] "Vratch," March 11, 1900.

RHEUMATISM (Gonorrhœal). *[Editorial.*

Dr. Chas. H. Frazier,[1] of Philadelphia, gives the following directions as to treatment:—

In the treatment of the acute period, in which pain is the predominant subjective symptom, there seems to be almost an unanimity of opinion. Rest and immobilisation of the joint at this time meet with the approbation of all but a few, and these few constitute a minority who favour in addition surgical interference in every instance. In addition to rest and immobilisation, the application of cold by the **Ice-Bag** or

the application of heat with **Hot Fomentations** or by the **Hot-Air Bath,** will materially assist in allaying pain. At the subsidence of the acute stage, opinions vary as to the course to pursue. At this time we have to deal with an effusion, the nature of which varies ; in the simple hydrops articularis the effusion is a clear synovial fluid, while in the other variety the fluid contains sero-fibrinous flakes; in both varieties there is thickening of the capsule, but this is more prominent in the severer type. A more important distinction is this, that in one case ankylosis rarely follows : in the other it follows not infrequently.

Referring to the opinions of some who have discussed the treatment of this condition, we find that Nasse prescribes aspiration and irrigation for cases with extreme distention, reserving arthrotomy for cases rebellious to the ordinary form of treatment and for those of the suppurative variety. König advises aspiration and the injection of a small quantity of carbolic acid. According to E. Senn, absorption must be promoted by rest, external medication, or puncture, as the effusion tends to remain and cause ankylosis. Christen advises arthrotomy in all cases. Delorme writes that the majority of Parisian surgeons indorse immobilisation in recent effusions—Michaux and Minod have attained the best results with immobilisation—or, if that fail, aspiration and irrigation. Schüller advises aspiration and irrigation in chronic cases, and if the effusion still persists, the injection of iodoform emulsion. Flüterer reported brilliant results following repeated injection of ½ a fluid drachm of the oil of sandalwood. Mühsam reserves aspiration only for those cases which do not respond to other forms of treatment, and combines therewith the injection of iodine.

It seems to Frazier that the course of treatment to be adopted should be midway between that of the most conservative and that of the most radical. At the subsidence of the acute symptoms we should strive to stimulate rapid absorption of the fluid in the joint and the infiltration into the capsule. To this end the patient should, if possible, be kept in bed with the limb elevated and firm compression applied to the swollen joint, preferably by means of a rubber bandage. A substitute for the rubber bandage would be strips of adhesive plaster, but he regards the former as having many advantages over the latter. The elasticity of the bandage insures the continuance of the desired compression, as the swelling of the joint subsides : the bandage can be removed and reapplied with greater ease. The elastic bandage stimulates absorption not only by compression, but when it is removed, as it should be for a while each day, a reactionary hyperemia, so to speak, ensues in the tissues, which of itself is an able promoter of

absorption. The bandage should be removed each day not only on this account, but in order that gentle massage may be practised.

In empyema of the joint, where the infection is a mixed one, there is but one course to pursue—immediate arthrotomy, antiseptic irrigation, and drainage. Such cases are rarely met with ; not only the patient's limb but his life is endangered, and even if the latter be saved the function of the limb would be most seriously interfered with.

A treatment such as that outlined above will be followed by more pronounced results than simple immobilisation with the application of absorbefacients, vesicants, or counter-irritants. If during this period the joint continues painful, there is no more efficacious remedy than the daily application of superheated air for its relief. Should there be no manifest improvement after the lapse of two weeks, or three at the outside, it is justifiable then to resort to aspiration, more especially if during this time there seems to be any tendency to ankylosis. If the fluid that is withdrawn from the cavity be perfectly clear, no further intervention is necessary ; should it, however, resemble that found in the serofibrinous form of gono-arthritis, an arthrotomy should be performed, and the joint cavity thoroughly freed of any fibrinous flakes that may be suspended in the fluid or deposited on the membrane or articular cartilages. Subsequently the joint should be again immobilised, and moderate compression applied with a flannel bandage ; the patient should be allowed to resume use of the limb, most cautiously at first, and not until the inflammatory process has wholly subsided. We should err rather on the side of tardiness than of haste in giving permission for the patient to resume use of the limb, remembering that we have been dealing with an acute synovitis of a peculiarly resistant type, and one which in many cases, especially if neglected, assumes a chronic form.

In this form the patient should first be given the benefit of the milder remedies—rest, compression and the like—and these failing, aspiration, or aspiration and irrigation, should be resorted to.

REFERENCE.—[1] "Therap. Gaz.," Jan. 15, 1900.

RHEUMATOID ARTHRITIS. [*Editorial.*

Dr. Wm. Ewart,[1] in a paper on the Relation of Gout to Rheumatoid Arthritis, points out that they are distinct diseases. Speaking of the acute attack of rheumatoid arthritis, he says : In one respect they differ absolutely from acute gout. Instead of being sharp and short they are apt to last almost indefinitely. They are generally treated as attacks of acute or subacute rheumatism. But

the more sedulously anti-rheumatic methods are applied so much the worse may the patient's sufferings become, and so much the more lasting the pyrexia. The aching, the pain, and the fixation of the joints are perpetuated instead of relieved by blankets, fomentations and medicines, and the case seems to be interminable. This peculiar behaviour is diagnostic of this type, and affords the clue to the only successful treatment.

The onset of amendment dates from the moment when the treatment is reversed, the sufferer allowed to lie in a cooler bed, and cold spongings and rubbings, so ill-borne in acute rheumatism, applied to the joints and to the general surface.

Three types of rheumatoid joints seem to afford room for some hesitation in diagnosis. They all occur at the gouty period of life.

In one of them there is symmetrical swelling of the joints with effusion. He regards these cases as much more closely allied to rheumatism than to gout, and as belonging to the group which may be termed "rheumatic" arthritis deformans.

In the second variety there is symmetrical enlargement and deformity, but although there may be synovial swelling and peri-articular thickening, there is no effusion. Cases of this kind are sometimes regarded and treated as gout, in spite of there being no tophi, because the patients, chiefly males, may present some gouty dyspeptic symptoms and an aspect analogous to that of asthenic gout. They are usually rheumatoid cases, with more or less constitutional tendency to gout, and it is among them that we may look for instances of the "gouty" variety of rheumatoid arthritis.

Lastly, there is the large group, chiefly of women of mature age, in whom there has been, and there is, no obvious gouty arthritis, and in whom the rheumatoid changes may be limited to the development of Heberden's nodules, and to slight and varying thickening of the wrists or other joints, but in whom, besides a strong gouty family history, there may be marked constitutional symptoms, such as are observed in chronic gout.

As regards treatment, Dr. Ewart recommends **Local Baths** and **Massage** in contra-distinction to general baths.

Meanwhile the internal treatment of such cases may be carried out on lines conformable not only to some of the obvious indications, but also to theories which are in some respects divergent. The abundant use of water as the means of accelerating excretion of waste products and of all forms of toxins, and assiduous attention to the activity of the bowels are equally desirable in gout and in rheumatoid

arthritis, and fulfil the indications claimed by the neural as well as by the humoral theory.

In mixed cases occurring in mature age it may be best not to complicate the position by any vigorous tonic treatment, nor even by the iodide of iron which has found so much favour since first advocated by Sir A. Garrod, and which is admirably suited to the uncomplicated form witnessed in children and young adults. There may, nevertheless, be room for the administration of **Arsenic** in small doses and of **Sulphur**, in addition to the purgatives. These have also been largely prescribed by the same authority before the more recent ideas concerning the septic origin of rheumatoid arthritis had been set forth. It may be said for arsenic that in addition to its antiseptic properties it must approve itself to those who regard arthritis deformans as conditioned largely by a disordered nervous function.

REFERENCE.—[1] "Med. Press and Circ.," March 8, 1899.

RHINITIS. (See also "Coryza".) *W. Milligan, M.D.*

In cases of chronic rhinitis Maraval [1] recommends the following as a snuff:—

R	Cocaine Hydrochlor.	grs. $2\frac{1}{4}$	Menthol	gr. $\frac{3}{4}$
	Camphor	grs. $1\frac{1}{2}$	Sugar	grs. $1\frac{1}{2}$
	Alum	grs. $1\frac{1}{2}$		

Gonorrhœic Rhinitis is described by De Stella [2] as being either of congenital origin (in consequence of vaginal infection), or secondary to an ophthalmo-blennorrhœa. Frequently the gonococcus is to be found in the discharge. Treatment consists in syringing the nasal cavities with sterilised water, and in insufflating a powder containing 3 grains of **Nitrate of Silver** and $2\frac{1}{2}$ grains of **Talc. Protargol** in 2 to 3 per cent. solutions may be used for painting the nasal passages, followed by the application of an ointment containing :—

Boric acid	grs. $22\frac{1}{2}$	Vaseline	oz. $\frac{1}{2}$
Menthol	grs. $2\frac{1}{2}$		

Atrophic Rhinitis.- Adolph Bronner [3] recommends the use of **Formalin** (1–1000 to 1–2000 aqueous solution) to be used with a nasal syringe, or a 1–500 to 1–1000 solution with a little glycerin added, to be used with a coarse nasal spray followed by insufflations of **Tannoform**.

As an application to the deep ulcerations occasionally found in inveterate cases of ozæna Fasano [4] advises the use of the following :—

R	Aristol	grs. 150	Castor oil	grs. 150
	Collodion	grs. 1200		

The application should be made daily by means of small cotton holders.

Hamm[1] recommends the use of **Citric Acid** in the treatment of ozæna. The nasal passages are first cleansed by means of the douche. A powder composed of equal parts of citric acid and sugar of milk is then insufflated three times daily. The deodorising action of citric acid is so great that all odour promptly ceases, the patients improve in general health, become more cheerful, and eat with a better appetite.

REFERENCES.—[1] "Merck's Arch. Mat. Med.," Feb., 1899; [2] "Belg. Med.," No. 9, 1899; [3] "Jour. of Laryng.," Oct., 1899: [4] "New York Med. Jour.," Jan., 1899; [5] "Treatment," Feb. 1900.

RINGWORM. *T. Colcott Fox, M.B.*

Tinea Tonsurans.—Jamieson[1] submits rules for the treatment of ringworm. The scalp must be kept bare of hair until the cure is complete. The scalp must be washed twice daily by means of a **Fluid Superfatted Potash Soap** and warm water and a flannel. The ointment selected must be rubbed in for ten minutes slowly and carefully twice daily in order to steadily saturate the permeable epidermis. Jamieson's favourite ointment is composed of **Precipitated Sulphur**, ʒj; **Salicylic Acid**, **Beta-Naphthol** or **Thymol**, and **Ammoniated Mercury**, each 10 grains; **Lanolin** or **Vasogen**, ʒj. **Oleate of Copper**, 25 to 50 grains to the ʒj, may be substituted. Jamieson notes the effect of **Salicylic Acid** in promoting moulting of the hairs, otherwise the problem before us is not fully met by saturating the epidermis with parasiticides. The difficulty is to saturate the whole hair, or to excite the rapid shedding of the hair without exciting too much or an undesirable kind of inflammation.

Sabouraud,[2] who is in charge of the Ecole Laillier where all the children are congregated at the Hôpital St. Louis, Paris, formulates the following treatment:—

(1.) Cut the hair short over the whole head as a prophylactic measure.

(2.) Limitation of existing patches by epilating healthy hairs to form a glabrous zone of 4 to 5 millimètres' breadth around each diseased area. This proceeding is the more complicated in endothrix cases characterised by groups of a few diseased short stumps disseminated over the scalp. (For my part I think this proceeding unnecessary —T. C. F.)

(3.) As a second prophylactic measure, preservation of unaffected regions of the scalp from inoculation. Fresh **Tinct. of Iodine**, diluted with 3 or 4 volumes of **Eau de Cologne** or **Alcohol** (90 per cent.), should be applied over the head for this purpose three evenings each week. Epithelium loosened by the fungus soaks up the iodine especi-

ally, and thus differentiates the diseased areas. In certain susceptible children a less penetrating aqueous solution should be used, viz., iodine and potassium iodide, of each, 2 grammes ; distilled water, 1000 grammes. On the alternate evenings rub all over the scalp an ointment composed of **Pyrogallic Acid**, 1 gramme ; **Oil of Cade**, 4 grammes ; **Benzoinated Lard**, 20 grammes. Every morning wash the scalp with soap and warm water, and afterwards dry it by rubbing in the following : **Crystallising Acetic Acid**, 15 drops ; **Mercury Bichloride**, 0·20 centigrammes ; **Eau de Cologne**, 200 grammes.

(4,) The active treatment of the diseased areas will vary with the character of the ringworm. Certain animal trichophytons set up the conglomerate follicular abscesses known as kerion, or in some cases a non-suppurative folliculitis. These lesions undergo a spontaneous cure by the gradual shedding of the diseased hairs under anodyne treatment, helped by epilation. The common ringworm, with practically no follicular inflammation will not cure in this manner, but it is necessary to copy the less formidable kerion picture by exciting the inflammatory condition by **Croton Oil**. It is prudent to test the susceptibility of the child, however, by a careful trial application of the pure or diluted oil to some spot. If the inflammation excited is too strong it can be mitigated by the action of starch poultices or wet compresses. The pustules excited by croton oil can be rapidly dried up by the application on the following day of pure tincture of iodine. Then after three days, wet compresses will soften the scabs, and the latter can be removed to prevent scarring. This treatment may be repeated at discretion. Epilation is a most valuable auxiliary, but its success depends on carefully extracting the hair with its root and root sheath.

(It must be pointed out that this treatment, though excellent for certain ringworms in circumscribed patches, is not applicable to more widespread diffuse cases and in very sensitive children—T. C. F.)

DESCRIPTION OF PLATES X XI, XII.

Plate X.

Infection of the Hair with Microsporon Audouini.

A.—Earliest stage showing : (*a*) Mycelium in the superficial epidermis ; (*b*) Its growth into the follicle around the hair, which is not yet attacked.

B.—The fungus attacks the hair, and entering beneath the cuticle, strips it. The mycelium at first divides up into unusually large segments arranged in clusters or chains, but gradually forms smaller and smaller cells, which collect into larger and larger masses.

C.—The fully infected hair showing : (*a*) The small mycelial cells constantly present on the bulb ; (*b*) The mycelial threads in the hair, which terminate in a fringe above the succulent living bulb ; (*c*) The sheath of small mycelial cells ("spores") forming a mosaic around the hair and hiding a certain amount of mycelial infiltration of the hair. This mycelium only occasionally shows signs of frequent division to form chains (*d*).

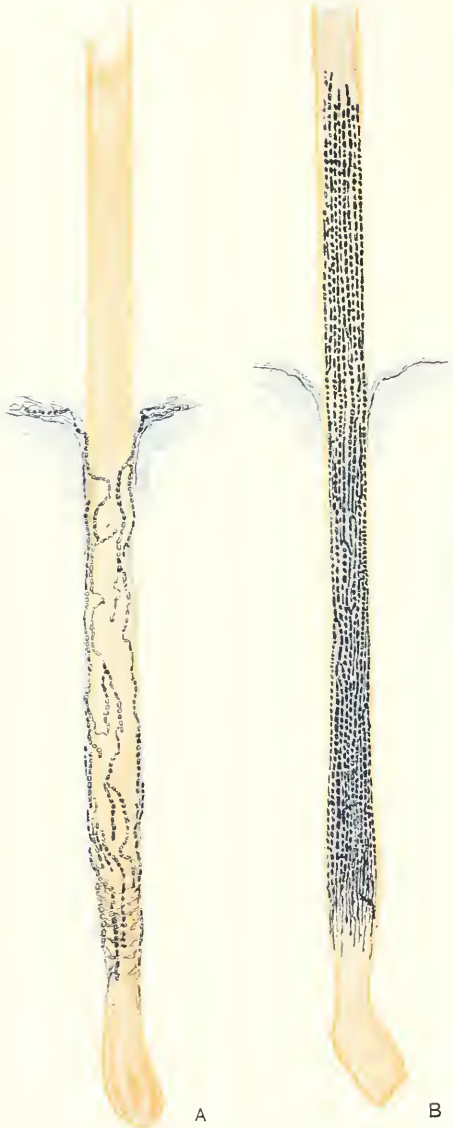
PLATE X.

Infection of the Hair with Microsporon Audouini.

MEDICAL ANNUAL, 1901.

Colcott Fox, del.)

SCOTT & FERGUSON, EDIN.
(WORK SON & S. 83 LTD.)



Infection of the Hair and Skin with the Endothrix Trichophyton.

(Colcott Fox, del.)

SCOTT & FERGUSON, EDIN^R^
(MORE SON & GIBB LTH)

PLATE XII.

Infection of Hairs with Ectothrix Trichophytons.

MEDICAL ANNUAL, 1901.

(Colcott Fox, del.)

SCOTT & FERGUSON, EDIN.
(YOUNGSON & G. &S. LTD.)

Plate XI.

Infection of the Hair and Skin by Endothrix Trichophyton.

A.—Early stage of infection showing the mycelium growing down the follicle around the hair. In the lower part the mycelium begins to enter beneath the cuticle.

B.—Later stage of infection in which the hair with cuticle intact is seen infiltrated with mycelium, ending in a fringe above the bulb. All mycelium has disappeared from around the hair—hence the name *Endothrix Trichophyton*.

C.—Mycelium in the epithelial roof of a vesicle from a woman's hand. Compare the chain formation with the mycelium in *Plate X*, A, *a*.

N.B.—It will be noted that the *Endothrix Trichophyton* is a larger fungus than the *Microsporon*, and always displays the chain formation.

Plate XII.

Infection of Hairs with Ectothrix Trichophytons.

A.—Hair in early stage of infection from inflammatory patch on infant's scalp showing: (*a*) Mycelium in the hair terminating in a fringe above the bulb; (*b*) Mycelial chains entering beneath the cuticle; (*c*) Copious network of chain mycelia encircling the hair, and not, as in Endothrix, disappearing.

B.—Hair from a beard case showing: (*a*) Mycelial chains within the hair entering the bulb, because the hair is dead and separated from its papilla; (*b*) extrapilar sheath of mycelial chains; (*c*) intrapilar chains.

C.—Horse's hair showing; (*a*) Intrapilar chains (the cuticle was intact); (*b*) extrapilar sheath of chains.

N.B.—It will be noted that in the Ectothrix fungi mycelial chain formation is the rule as in Endothrix, and the fungus is almost always much larger than in Microsporon. The fungus, however, as in Microsporon, is both extrapilar and also intrapilar in different degrees, hence the terms *Ectothrix* and *Ecto-endothrix*.

REFERENCES.—[1] "Edin. Med. Jour.," June, 1900: [2] "Traité des Mal. de l'Enf.," ed. by Grancher, Comby, Marfan, 1898.

ROTHELN. (See "Rubella.")

RUBELLA (German Measles; Rotheln; Epidemic Rose-rash).

Edwd. Wilberforce Goodall, M.D.

This disease is usually described as existing under two forms, the one resembling measles (morbilli), the other, scarlet fever. It has, however, been suspected by some authorities that each of these forms is really a distinct disease. Clement Dukes,[1] of Rugby, has recently brought forward some most suggestive evidence in favour of this view. His evidence consists of three series of observations. In the first, he observed an outbreak of sixteen cases in a public school of a disease in which all the cases conformed to the so-called scarlatiniform variety of rubella. Secondly, in a private school, he met with an outbreak of thirty-one cases, the nature of which at first puzzled him greatly, but was at last solved by supposing that the outbreak consisted of two separate infectious diseases present in the school at the same time, namely, scarlet fever and the scarlatiniform variety of rubella. Six patients were attacked firstly by this latter disease, and

subsequently, within a few days, by scarlet fever; and one patient was attacked by scarlet fever first, and the other disease afterwards. In the third set of observations he saw the scarlatiniform variety of rubella in several boys who he knew had had rubella (presumably the morbilliform variety) on a previous occasion. Hence Dukes would separate this scarlatiniform variety of rubella (which in his paper he tentatively calls the "fourth disease,") from the morbilliform variety, for which he would reserve the term rubella. The other two members of the four diseases are scarlet fever and measles.

This "fourth disease" is very difficult, indeed, in isolated cases, impossible to distinguish from mild scarlet fever; more especially as an attack may be followed by marked desquamation; but the desquamation is not of the "pin-hole" or "ringed" variety, as in so many cases of scarlet fever. In the "fourth disease" the conjunctivæ are injected, and the lymphatic glands universally are enlarged, hard and tender. Complications and sequelæ do not occur. The incubation period is from nine to twenty-one days; that of scarlet fever is from a few hours to five days

REFERENCE.—[1] "Lancet," July 14, 1900.

SCARLET FEVER. *Edwd. Wilberforce Goodall, M.D.*

PATHOLOGY.—A considerable amount of work has recently been undertaken, having for its object the micro-organism of this disease. For many years past Klein [1] has believed that he has found the organism in a certain streptococcus, which, therefore, he calls the streptococcus scarlatinæ. When this microbe is grown in broth the fluid remains clear, and the organism forms a single large or several small conglomerate masses at the bottom of the test-tube. When grown in milk this medium is clotted in a few days. On agar nodular colonies are formed. This organism appears to be the same as that isolated by Kurth, and called by him streptococcus conglomeratus. Gordon,[2] who has lately been continuing Klein's researches, found the organism in question in twenty out of twenty-seven examinations of tonsils of patients in all stages of scarlet fever, and in two out of twelve cases of nasal discharge. But twelve cases of ear discharge in scarlet fever were examined with negative results as far as the streptococcus scarlatinæ was concerned.

Billings,[3] however, examined bacteriologically the fauces of seventeen cases of scarlet fever, and in one only did he find Klein's streptococcus. Class [4] declares that quite a different organism is the cause of the disease. According to him it is a diplococcus, which, when grown on a special medium (glycerin-agar, to which is added

about 5 per cent. by weight of sterilised black garden earth), assumes the form of a very large gonococcus. But according to the medium it varies both in form and virulence.

It is stated by Class that this diplococcus is constantly present in the secretion from the throat of cases of scarlet fever, and that it can also be isolated from the blood and desquamating skin. It is pathogenic to mice, swine and guinea-pigs; and produces in white swine a febrile attack, accompanied by an erythematous rash and followed by desquamation. The changes in the various organs found post mortem in animals resemble those found in fatal scarlet fever in the human subject. Further, the fever produced in animals by this organism is infectious, so that an animal infected by inoculation will give the disease to others in a natural way. If the blood of a patient recovering from scarlet fever be added to a culture of the diplococcus, the latter is prevented from growing.

Class is confirmed in his observations by Gradwohl[5] and Jacques. He states that the organism described by Baginsky and Sommerfeld[6] is the same as his diplococcus.

REFERENCES.—[1] "Rep. Med. Off. Loc. Gov. Board," 1896-97-98-99; [2] Idem., 1898-99; [3] "New York Med. Jour.," June 3, 1899; [4] "Chicago Med. Rec.," May, 1899; "New York Med. Rec.," Sept. 2, 1899; "Lancet," Sept. 29, 1900; [5] "Phil. Med. Jour.," Mar. 24, 1900; [6] "Ber. klin. Woch.," July 2 & 9, 1900.

SCIATICA. *Grœme M. Hammond, M.D., New York.*

Morton,[1] in an interesting article on the treatment of neuritis and neuralgia by **Electro-Static Currents**, reports thirty-nine cases of sciatica treated by this method.

The method of application is as follows: A metal plate connected with either pole of a static machine is placed over the painful area. The other pole is grounded. A current is then generated capable of producing a spark of from two to four inches between the poles, the patient thus receiving powerful electric surgings in a manner absolutely painless to himself. Of the thirty-nine cases thus treated thirty-two were known to be cured and seven were relieved of pain and believed to be cured, but were lost sight of before this question could be accurately determined. There was immediate relief from pain in all cases. The minimum duration of treatment was four days and the maximum seventy-eight days, the average being thirty-two days. The duration of each séance was from fifteen to twenty minutes. The author claims that by this method rest in bed, fixation of the parts, and medicinal treatment are unnecessary.

Lemoine[2] speaks highly of **Methylene Blue** as a remedy in this disease. It rapidly effected the disappearance of the pain in four-fifths of his cases. It is best administered in pill form, with about half its weight of powdered nutmeg, and in doses of from 1 to 6 grains three times a day.

Ghetti[3] recommends deep injections of **Salophen.** A solution of this drug containing 15 grains in 2½ drachms of sterile, slightly alkaline water, was injected deeply into the tissues as close to the sciatic nerve as possible. The injections were given every other day, and the patient was kept absolutely quiet. After the sixth injection the pain was considerably diminished, and after the eleventh it disappeared completely. After the fifteenth injection the patient was told to rise and to walk about a little. After thirty injections he was considered cured.

REFERENCES.—[1] "Med. Rec.," April 15, 1899; [2] "Treatment," May 11, 1899; [3] "New York Med. Jour.," Oct. 27, 1900.

SCLERITIS.

Synopsis.—(Vol. 1900, p. 464.)—Stubborn cases have yielded rapidly to sub-conjunctival injections of 1 in 1500 solution of **Cyanide of Mercury.**

SEA SICKNESS. *Græme M. Hammond, M.D., New York.*

McDougall[1] reports forty-seven cases of sea sickness treated by **Atropine** and **Strychnine.** Of these, forty were completely cured, the others being greatly benefited. The remedies were injected hypodermically in combination in the proportions of from $\frac{1}{60}$ to $\frac{1}{30}$ grain of strychnine sulphate and $\frac{1}{150}$ grain of atropine sulphate dissolved in 10 or 15 minims of water. When necessary the dose had been repeated in a few hours or the next day. The injection should be given at the very onset of the nausea or discomfort, or as a prophylactic in very susceptible persons.

The "Bulletin Médical"[2] recommends the following:—

℞	Menthol	0·1	Syr. Simplicis	30·00
	Cocain. Hydrochlor.	0·15	Alcohol	60·00

M. Sig.—A teaspoonful every half hour.

REFERENCES.—[1] "Brit. Med. Jour.," March 21, 1900; [2] "Med. Rec.," May 20, 1899.

SHOCK. (See "Pelvis, Surgery of.")

SHOULDER (Amputation of). *Priestley Leech, M.D., F.R.C.S.*

Interscapulo-Thoracic Amputation.—Russell S. Fowler[1] has a good article on this subject. The indications for this operation are fairly well defined, and may be classified as follows: Extensive injuries of all kinds to the upper extremity involving so considerable a loss as to

render the life of the limb improbable ; in compound comminuted fracture of the shoulder joint : in gunshot wounds, etc. ; in caries of the humerus and shoulder joint where the disease is extensive ; in extensive local tuberculosis ; in sepsis and gangrene, and in osteomyelitis. It is also indicated in injuries of the brachial plexus in the neck (such as are produced by stab wounds) resulting in paralysis, severe neuritis and trophic disturbances which are not benefited by suturing of the cords of the brachial plexus in the neck ; in cases of pain of the entire upper extremity which does not yield to other treatment, or section of the brachial plexus in the neck or to section of the posterior nerve roots. In cases of carcinoma of the breast, whether recurrent or primary, involving the axillary vein and brachial plexus and thus producing œdema and pain. In large benign tumours which render the extremity painful and useless and which might become malignant. In malignant tumours, particularly sarcomata, at or in the neighbourhood of the shoulder joint. Fowler says this operation should be done in all cases of malignant disease of the humerus whether in the upper end, the shaft, or the lower end of the humerus.

The difficulties of the operation are the finding of the artery and the vein ; the former in large tumours displacing the artery, and the latter in traumatic cases in which there is extreme injury to the vessels resulting in collapse of the vein.

The dangers of the operation are : —

Hæmorrhage.—This may arise from severing of the main trunk, the axillary branches, or the enlarged veins near a tumour ; preliminary ligation will avoid the first two and minimise the last. The danger of hæmorrhage cannot be over-estimated, and the immediate success of the operation depends to a great extent upon the amount of blood lost. The best way is first to tie the subclavian.

Shock.—The main preventive measure of shock is preliminary hæmostasis ; the extremity should be emptied of blood by elevation of the limb.

Septicæmia should seldom occur.

Entrance of Air into Veins has occurred in some cases.

He has collected seventy-two cases of primary interscapulo-thoracic amputation for malignant disease of the humerus. Of these seventy-two cases, eight died, a mortality of $11\frac{1}{9}$ per cent. This is more than twice the mortality conceded by Berger. The cases died from œdema of the lungs and empyema, secondary hæmorrhage, infection, and the rest from shock. The percentage of cures may be placed at $46\frac{2}{3}$ per cent. The mortality of primary interscapulo-thoracic amputation is less than where it has been preceded by resection of the

scapula or the humeral head, and the percentage of cures are over 56 per cent. in the primary and 29⅔ per cent. in the consecutive operation in malignant disease.

Fowler believes that sarcoma of a long bone is not cured by extirpation of that bone alone, for the reason that in the vast majority of cases healthy flap structures cannot otherwise be obtained than by going through the bone above. His conclusions are : (1,) Sarcoma of the humerus offers slight chance of ultimate cure by any but the most radical procedure ; (2,) The operation of choice for sarcoma of any part of the humerus is primary interscapulo-thoracic amputation.

For caries four cases are reported, all ending in recovery. Of two cases for tuberculosis, both got over the operation, but a sinus was left in one and a large granulating surface in the other. For injury twenty-six cases are reported ; the mortality for interscapulo-thoracic amputation for injury may be given as 36 per cent. or three times that for malignant disease.

REFERENCE.—1 "Ann. Surg.," Jan. and Feb., 1900.

SINUSITIS. (See "Nose.")

SKIN (Malignant Diseases of the). *T. Colcott Fox, M.B.*

In a discussion on the classification, clinical features, etiology, pathology, and treatment of malignant skin diseases at the American Dermatological Society, 1900, F. J. Shepherd,[1] of Montreal, said all now believed in the local origin of cancer, and as a surgeon he deemed excision of the growth and the adjacent lymphatic channels and glands the most scientific procedure in the majority of cases. The weak point in the treatment by caustics is that it postponed the removal of the neighbouring lymphatic tissue and glands. Surgeons were much prejudiced against the use of caustics, and had little experience of their use. Certain malignant ulcerations, however, he admitted, might be successfully treated by caustics, especially rodent ulcer, and those slow-growing forms of epithelioma situated in regions somewhat removed from glands, as the nose, forehead, temples, cheeks, hands, and where the glands are not early affected. Before applying a caustic the epidermis must be curetted or destroyed by caustic potash. The best caustics were **Arsenic, Chloride of Zinc,** and **Caustic Potash.** Stelwagon said the separation of a long adherent slough could be hastened by poulticing. Morrow preferred the actual cautery after curretting, and as a caustic chloride of zinc as less painful. Augustus Ravolgi strongly recommended the application of **Formalin** after cocainising the surface and protecting the surrounding skin with plaster. The formalin can be used pure or in a paste with

rice powder and oxide of zinc. Hartzell, whilst admitting that excision is often the most rapid, the least troublesome, and the most effective method of treatment, rightly pointed out that in the selection of a remedy we must reckon with the peculiarities and prejudices of our patients, some of whom will not submit to the knife. He especially praised the destruction of the epidermis by caustic potash, followed by the application of a 40 per cent. pyrogallol plaster. Other methods discussed were electrolysis, Massey's cataphoric method, parenchymatous injections of alcohol, etc., aniline dyes, and hypodermic injections of arsenic and Coley's fluid.

REFERENCES.—[1] "Journ. Cut. and Gen.-Urin Dis.," Oct., 1900; [2] "Med. Rec.," April 7, 1900.

SKIN AFFECTIONS (Electrotherapy and Phototherapy in). (See also "Eye Diseases," p. 246, "The Light Treatment," p. 83, and "Study of X-Rays in 1900," p. 90.) *T. Colcott Fox, M.B.*

Electrotherapy applied to the Treatment of localised or generalised Skin Affections.—Attention to this method of treatment was specially drawn by Dr. d'Arsonval, of Paris, and in 1894, Dr. Oudin set before the French Society of Dermatology and Syphilography his experiences with currents of high frequency and high tension. Then Dr. Brocq, with Dr. Bisserié, organised at the Hôpital Broca a service of electrotherapy. Drs. Gastou and Chabry[1] record the results attained in an electro-therapeutic service instituted at the Hôpital St. Louis.

The installation comprises (1,) A static machine; (2,) An apparatus for high frequencies; (3,) A table with faradic, galvanic and faradogalvanic currents; (4,) An apparatus for light baths. All these are described in detail.

The greater number of patients have been treated by static douches when the skin affection was generalised. For *prurigo* for instance the early treatment was by the static douche, and afterwards mostly by the auto-conduction. For localised dermatoses the local application of high frequency currents has been combined, or not, with the static douche. It is necessary to distinguish between the action of *effluvia* and *sparks* in the high tension currents. The effluvia are without danger; they produce a marked vaso-dilator action, followed soon by a vaso-constriction. The sparks, on the contrary, demand care, and are painful; they determine a vaso-constriction which may end rapidly in an eschar.

In true alopecia areata there were no striking results with high frequency currents, and the number of sittings is an objection.

Lupus erythematosus is, if not cured, at least rapidly ameliorated by the effluvia.

Three cases of *cutaneous tuberculosis* were favourably affected, but neither effluvia or sparks did good in *lupus vulgaris*.

Pruritus and *prurigo* were benefited from the outset by douches, but the toxic or organic prurigos, and the pruritus of lichen planus were especially ameliorated by the auto-conduction (solenoid). A case of psoriasis in a young girl rapidly disappeared by the latter method.

The authors conclude that electrotherapy is a useful help in many cases, but requires further study.

In a general way the action varies with the nature of the electric current employed and its mode of application. The *static douche* has a sedative action on the nervous system which can range from depression to excitation and aggravation. Locally, it can be applied, if we do not wish to provoke local vascular modifications.

Currents of high frequency have an inverse action better tolerated ; they excite nutrition, and seem to act rather by way of the circulation. In general application, under the form of auto-conduction (solenoid) they act on the general circulation : in local applications (effluvia or sparks) they produce a vaso-constriction.

Brocq added his experience that effluvia of high frequency have a real curative action in certain cases of *lupus erythematosus*, unfortunately not in all. In *grave pelades* he had not met with success.

Phototherapy in the treatment of Skin Diseases.—In a discussion on phototherapy, Sabouraud,[2] who has charge of the Finsen method in the Hôpital St. Louis, stated, that in lupus vulgaris it had given results such that no other method could be compared with it. Unfortunately it was very expensive. Brocq said that neither the X-rays nor electrical effluvia of high frequency attacked the deep tuberculous infiltrations.

At the Fourth Congress of Dermatology and Syphilography, 1900, Finsen showed some of his results, which were remarkably good. The treatment is based on the faculty of light to penetrate the skin, to produce a cutaneous inflammation, to act as a bactericide. His apparatus and method are now well known. Besides lupus vulgaris the treatment is successfully employed in lupus erythematosus, alopecia areata, cutaneous epithelioma, acne vulgaris and rosacea, angiomatous nævi.

Radiotherapy.—The X-rays, according to Zarabin,[3] can render good service in lupus vulgaris, chronic eczema, hypertrichosis, varicose ulcers of the legs, acne vulgaris, lupus erythematosus, favus, psoriasis, elephantiasis and ephelides.

Gassmann and Schenkel[4] amongst other cases obtained a good result in a very rebellious kind of non-parasitic sycosis.

Lang obtained an amelioration but not a cure. Freund and Schiff obtained a fall of the hairs in a case of sycosis in ten séances, and in a second in seven séances, with cessation of the inflammation, and subsequent regrowth of hair. In a case of favus thirteen séances were required.

W. A. Pusey[5] has a paper dealing with the treatment of skin diseases by Roentgen rays. Four classes of affections, he says, have been especially dealt with, viz.: (1,) To remove superfluous hair in hypertrichosis; (2.) To remove diseased hair in sycosis, tinea tonsurans, and favus; (3.) To stimulate the tissues and cause absorption of inflammatory products in such diseases as chronic eczema; (4.) To cause destruction or absorption of tissues of low vitality, as in lupus. In Roentgen rays we have apparently an agent of the utmost value for removal of a large number of hairs. It is painless, not nearly so tedious as electrolysis, and is particularly adapted to remove down and profuse hair growth. In the intractable mycotic disease of the hair, such as chronic ringworm and sycosis, the removal of hairs is effected, but the author does not discuss the question of their permanent loss. That lupus can be removed by this method is undoubted. Schiff gave a convincing magic lantern demonstration at the recent International Dermatological Congress in Paris, and the treatment has already met with success in London. In a warty tuberculosis of the hand under the writer's care, however, the treatment failed. In rodent ulcer great improvement has been noted. The treatment is painless, and the scars left are excellent; indeed, very closely resembling those left by the Finsen light treatment. The latter, however, is a much slower process and more expensive. Doubtless, disastrous results followed some of the earlier attempts at treatment, but experience has now greatly perfected the method. Pusey thus summarises the directions formulated by Schiff and Freund:—

Avoid.—(*a*,) Too great strength of primary current, *i.e.*, never more than $1\frac{1}{2}$ ampères and 12 volts. The currents of high amperage in use for skiagraphy are here out of place.

(*b*,) Too great tension of secondary current; never use an inductor of more than 30 cms. spark length.

(*c*,) Too long and too frequent exposures: at first not longer than five minutes.

(*d*,) Too short a distance between skin and tube; at first not less than 15 cms.

Freund recommends the use of a mechanical interrupter run at the rate of 800 to 1000 interruptions per minute.

Apparatus required:—

(1,) Inductor of 30 cm. spark length, capable of being worked with a current of 12 volts and 1 and $1\frac{1}{2}$ ampères.

(2,) Storage battery for the primary current.

(3,) Amperemeter and voltmeter for the primary current, and of course suitable rheostats and switches.

(4,) Mechanical interrupter, with tachometer for measuring the number of interruptions.

(5,) Suitable lead masks for protecting surfaces which are contiguous to the areas to be treated.

Idiosyncrasy is believed to play an important part in the exceptional cases in which unusually severe results are experienced. Freund advises testing the patient by making three exposures to begin with and waiting to see the results. Those who are interested in this treatment will find a very useful bibliography appended to the paper.

Albers Schonberg and Hahn[6] also record their favourable experiences.

At the Fourth International Congress of Dermatology and Syphilis, held in Paris in August, 1900, Schiff and Freund, of Vienna, gave a very interesting lantern demonstration showing the result of this treatment chiefly in lupus vulgaris. The results appeared strikingly good.

The best effects have been obtained in : (*a*,) Parasitic diseases of the skin ; (*b*,) Hypertrichosis or affections where the elimination of the hairs is desirable.

These authors especially recommend the treatment in lupus vulgaris, mycoses of the derma, hypertrichosis, sycosis, favus, tinea tonsurans, alopecia areata, lupus erythematosus, acne, furunculosis, folliculites.

The treatment of favus and sycosis only takes a few weeks ; that of hypertrichosis about eighteen months.

REFERENCES.—[1] "Ann. de Derm. et de Syph.," March and July, 1900 ; [2] "Ann. de Derm.," July, 1900, p. 882 ; [3] "Monat. f. Prakt. Derm.," 1899. xxxviii. p. 389 : [4] "Fortschrette anf. derm. Gebrete der Röntgen's Rahlen," xii., 1899 : [5] "Jour. Cut. and Gen.-Urin. Dis.," July, 1900 ; [6] "Münch. Med. Woch.," xlvii., 1900, pp. 284, 325 and 363.

SKIN GRAFTING.

Priestley Leech, M.D., F.R.C.S.

Kellock[1] suggests a somewhat novel method of skin grafting, a combination of Thiersch's method and the method by transplanting the whole thickness of the skin. The illustration (*Fig.* 23) shows the

method very well. The size and shape of the piece of skin to be transplanted in its whole thickness is marked out. Small superficial grafts (*a*) are cut on all sides of it with a very sharp razor; these are left attached at their bases to the margins of the main part of the graft and can be reflected on to it. The latter (A) is then dissected up on its whole thickness, and all fat having been removed from its under surface with curved scissors or a very sharp scalpel the whole graft is laid on the raw surface and the edges spread out with care and exactness; these rapidly adhere and by fixing the main part of the graft assist in ensuring its growth. The number of such grafts used depends on the shape and size of the surface to be covered. When the requisite number have been planted and the fringes exactly spread out they can be treated in the ordinary way as Thiersch grafts. The scar shows less tendency to contract and is less unsightly and less adherent to the underlying parts than that after the use of Thiersch's method alone. The edges of the graft must be accurately spread out, for much depends on the adhesion of the extreme edge and a little curling over may intefere with its growth.

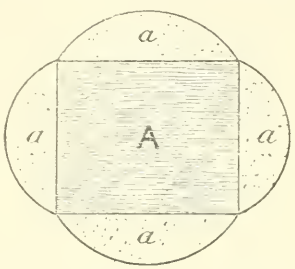


Fig. 23.—Diagram to represent a graft consisting of A a square piece of the whole thickness of the skin surrounded by *a*, *a*, *a*, *a*, a fringe of epithelium only.

REFERENCE.—[1] "Lancet," Nov. 25, 1899.

SMALL-POX.

Synopsis.—(Vol. 1900, p. 474). In early stages Strychnine and Digitalis appeared useful. Feeding with Milk, Meat Essences and Stimulants with careful nursing are most important. In early stages Baths may cause collapse; better in pustular stage. Mask of lint soaked in Boracic Lotion may be applied to face. Salicylate of Soda for backache. Antipyrine for headache. Inhalations of Tinc. Benzoin Co. relieved sore throat. Syringing out nose and throat with Liq. Sodæ Chlorinatæ. Lindsay used Anti-Streptococcus Serum. R Ichthyol, 10 parts; Oil of Sweet Almonds, 60 parts; Lanolin, 20 parts. M. A useful ointment for the face.

SPINE (Surgery of). (See also "Pott's Disease.") *Robert Abbé, A.B., M.D., New York.* *W. Scott Schley, A.B., M.D., New York.*

Delageniere[1] is opposed to conservative treatment in fractures of the spinal column. He believes that when there are symptoms operation should be promptly resorted to, as otherwise irreparable changes may result. He reports two cases: In one the results of prompt operation were entirely successful, while in the other a delayed opera-

tion was practically without benefit. The present operation of laminectomy is not a dangerous one, and gives sufficient improvement to justify it. The benefit may not always be seen in restored motion, but is apparent in removal of meningeal irritation caused by pressure. Smith[2] reports a case of paraplegia with sphincter paralysis, operated upon as long as four and a half years after the accident. Two weeks later recovery began ; the sphincters recovered, bedsores healed, and the patient finally could walk, holding two chairs. A spicule of bone together with callus, uniting the arches of the eleventh and twelfth dorsal vertebræ, were the cause of trouble. The use of the X-ray for the determination of bony and articular integrity, or the reverse, is now an essential in the treatment of spinal injuries of any degree of severity.

A most important review of the subject of traumatic hæmorrhages *into the spinal cord* is that of Bailey.[3] He states that if bullet and other penetrating wounds can be excluded in the presence of an injury, but three possibilities remain : (1,) Pressure from displaced or broken down protecting structures ; (2,) Pressure from blood poured out within the spinal canal (extra- or intradural) ; (3,) Primary *hæmatomyelia.* To the first class belong the ordinary fractures and dislocations, generally of easy diagnosis, and in which cord damage is usually extensive, with paralysis of motion, sensation and sphincter action. The seat of trouble cannot always be determined by displacement or motion of the vertebræ. Hæmorrhage takes place to a varying degree from the capillary extravasations to long columns or "pencils" of blood, extending up and down the cord, and producing symptoms at a level above or below the site of cord injury. Thus we may have combined, the symptoms due to external pressure and those of hæmorrhage within the cord. The "dissociation" type of anæsthesia (pain and temperature sense lost with tactile preserved) is here characteristic.

Pressure from blood poured out between the cord and vertebræ, he believes to be "rarely, if ever, of clinical importance." It has received much more attention than it merits, and is usually associated with the much more important crushes or intra-cord hæmorrhages, and to which the symptoms are really due. Primary hæmorrhage into the cord itself, from rupture of its blood-vessels, is a comparatively frequent lesion. It is of greater or less extent, and may occur without any fracture or dislocation of the spine, and is associated with a certain amount of damage to nerve cells and fibres. The chances of recovery are much better than in any other variety of cord injury, and the prognosis is therefore good. Six out of twenty-one cases of spinal

cord traumatism were thought by Thorburn to be examples of this lesion. In twenty-two autopsies upon spinal cord injuries, Stolper found two to be primary hæmatomyelia. Owing to the fact that not many affected with this lesion die, exact data are difficult to get. Bailey believes from clinical information that the proportion of occurrence is even larger. The hæmorrhage is usually in the gray matter from its greater vascularity and softer consistence. If the hæmorrhage is extensive the white matter is invaded and the blood may extend in a column through several segments. Hæmorrhage from injury is more frequent in the fifth, sixth, seventh and eighth cervical and first and second dorsal (region of greatest spinal movement). There may be disseminated capillary or larger hæmorrhages up and down the cord, or a small or large hæmorrhage at one level. After injury producing a certain amount of damage the patients may have gone about complaining of no symptoms calling attention to the nervous system. Such a case he reports, verified by subsequent autopsy (death being due to coincident rupture of liver and kidney). The larger focal hæmorrhages may simulate severe cord lesions; paralysis of upper and lower extremities, loss of sphincter control, etc., with dissociation anæsthesia. In the purely hæmorrhagic conditions these symptoms are of short duration, many cases recovering almost entirely, depending upon the degree of destruction of nerve tissue. Small hæmorrhages may produce none of the typical symptoms of spinal injury. Sometimes only a patch of localised anæsthesia, or weakness of a muscle, or group of muscles, remains after an apparently severe injury. The *treatment* for these hæmorrhages *rests upon the differential diagnosis of injuries to the spine*, and is non-surgical, but expectant.

Albertin[4] showed a case to the Lyons Surgical Society of traumatic paraplegia, in which lumbar puncture was done to relieve suspected pressure. Slight improvement seemed to date from the time of interference. Owing, however, to the fact that he could walk five weeks later, we are reminded of the intra-hæmorrhagic lesions of the cord, rather than of a paralysis from pressure without the cord.

Lumbar Puncture, both for diagnostic and therapeutic use, has been more often resorted to the past year. Pfaundler[5] has completed a series of two hundred punctures in children, in whom he considers it easier and safer than in adults. There were no serious accidents. He chooses the "lumbo-sacral hiatus" with the child in the sitting posture, that there may be a gravitation of any sediment. The therapeutic indications are to lower intracranial pressure and to

remove infectious material. Sicard,[6] during the last two years, has made eighty punctures for diagnostic or therapeutic use, with no bad result. He tried the introduction of medicinal substances, and believes that this method permits a direct and local treatment upon the subjacent nerve centres. Much depends upon the density and nature of the injection, also upon the quantity and rapidity of introduction Chauffard and Quénu[7] have successfully treated tetanus by this method of administration of antitoxin. Netter[8] has recently advocated repeated lumbar puncture in suppurative cerebro-spinal meningitis. In seven cases since May, 1899, five so treated recovered completely, one with subsequent ankylosis of two vertebral articulations, and one was still sick at time of writing. Donzello performed some experiments relative to the rapidity of transmission of germs, introduced under the cerebral dura, down the cord. He found that when the animal was immune, or relatively so, to a particular organism, its appearance was slow in the fluid drawn off by successive punctures in the lumbar region. Bier[9] and others have successively induced anæsthesia to pain by cocainisation of the spinal cord through a spinal puncture. Dilute solutions of cocaine are used, containing ·005–·01–·015 gm. of the drug. Loss of sensation begins in the lower extremities four to eight minutes after the injection, and ascends higher the larger the dose, lasting as long as thirty to sixty minutes. It has been present as long as forty-five minutes with only ·005 gm. There is usually increased rapidity of the pulse with headache, and sometimes a chill and nausea follows. Bier reports six operations done without any pain whatever, the patients being perfectly conscious throughout their performance : Resection of tubercular ankle ; Sequestrotomy in osteomyelitis of tibia ; Resection of ankylosed knee ; Curettage of a tubercular sacral area, etc. Tuffier[10] has operated upon over one hundred cases (to September, 1900) by this method. He uses a sterile 2 per cent. solution of cocaine. He began with minor operations, but soon demonstrated the utility of the method for major work. He performed gastrotomy, hernia operations, and even an abdominal hysterectomy which occupied seventy minutes. Nausea was present in a large percentage of cases, while rapid pulse and chill were not infrequent. The sensation of pain disappears first, while the sensation of touch is diminished or disappears only after a long time, and with larger doses. Sensations of temperature remain intact, but the pain produced by hot substances is much diminished. Bier himself had given up this method of producing anæsthesia on account of the disagreeable after-effects, but thinks the method applicable to those cases where general anæsthesia is inapplicable, or the Schleich method inadequate.

Lower[11] and Seldowitsch[12] report additional cases. Marx[13] has used it in parturition.

Marcy[14] has operated successfully upon a case of spina bifida, with a sac of large size, by doing a modified hernia operation, but no better method than Mayo Robson's has been proposed. Reid[15] had a case in which aspiration to lessen chances of shock from sudden release of pressure was done for several successive days before the operation. The stump of the sac was used to close the spinal cleft, and a plaster jacket worn for fourteen weeks. No recurrence had been noted (over two years elapsing).

Trendelenburg[16] advocates resection of the vertebral arch in the pressure paralysis of spondylitis. He believes that it gives a very much better prognosis than is thought, and is especially indicated in cases of almost or of entirely healed trouble. The good results are slow in developing, often six months, or a year or more.

The operative treatment for *spinal tumours* (those within the spinal canal) is steadily gaining in favour. As yet the reported cases are rather too few for deductions or statistics of great value however. Bruns, reporting but twenty cases in 1898, believed operation indicated if the diagnosis of tumour be fairly made. Putnam and Warren,[17] in an excellent article, with table, of the thirty-three operated cases of literature, and from their own experience, hold more conservative views. They insist upon more careful observation and diagnosis, in which but little progress has been made. Their analysis of these thirty-three cases shows that seven recovered (in two, records were imperfect); ten were improved (in five, this was lasting or great): in ten, operation seems to have hastened death (by infection, shock, or hæmorrhage); in nine, operation seems to have had little or no effect. Improvement in diagnosis and operative technique will better these percentages in the future, "but at the worst the figures show but one out of three chances for hastening death against even chances for some improvement." The most satisfactory results were, and will undoubtedly continue to be met with in the cases of benign tumour, fibroma, lipoma, etc., of extra-dural growth. Some very satisfactory results were obtained in sarcomatous tumours. Two cases are of especial interest because, although permanent relief could not be expected, the immediate results of the operation were so good: one presenting an endotheliomatous infiltration of the cord was markedly benefited by laminectomy. The general health improved as soon as convalescence from the operation was established. Freedom from pain and almost completely from obscure recurrent attacks of chill and fever, lasted for several years, when recurrence of severe pain

seemed to warrant a second interference. Further laminectomy and drainage was done, after which pain and other untoward symptoms ceased at once, and had not returned at time of writing. A second case with sarcoma high up in the cervical region, and paralysis of legs and arms, and impaired respiration one month after operation, could get about with help, and almost all motions of the extremities were possible. There was no subjective impairment of sensation of consequence. The article cautions against expecting too much in cases similar to the first, as operation may not have had as much to do with the relief as appeared. Sachs[18] records two cases of sarcomatous tumour pressing upon the cauda equina successfully located, and removed by operation with recovery of the patients. To the foregoing cases may be added another by the author of this paper, together with a method of operation not heretofore published, but which has been used by him for several years for exposing the spinal canal and cord.

The patient, a young man of twenty-six years, suffered from a sarcomatous tumour involving the cord, and extending from the fifth cervical through the fourth dorsal segment. The cord was found symmetrically enlarged, and filled the spinal canal. The tumour apparently originated near the central canal, and had partly spread the cord and partly invaded it, the white matter being spread out over the mass within. Pain began in the limbs two and a half years before operation. For nearly two years previous to it there had been paraplegia, with spastic contractures. Somewhat later, pain, succeeded by paresis of motion, occurred in the arms. Exploratory laminectomy was performed by the following method. An incision, $1\frac{1}{2}$ to 2 cm. *to one side of the median line*, and spinous processes, and for three, four, or five vertebræ, is made and carried right down to the laminæ. The muscles are bluntly separated from the same (towards the median line, as far as the junction of spine and lamina), and are then retracted to either side. Cutting forceps are now used to bite through the spines at their bases at the junction with the laminæ, leaving them attached by their apices and sides to the spinal muscles and aponeuroses. Strong retraction brings the vertebral arches into good view in the centre of the wound. A modified rongeur forceps is used to cut rapidly away a portion of each, and the spinal canal is quickly opened. In closing the wound the spines and muscles are allowed to fall back into place, a few buried catgut sutures interrupted or continuous, uniting the deeper muscular incision taken, and the skin closed by subcutaneous suture, with or without a small rubber tissue drain. With bony regeneration a much firmer and better protection is secured for the cord, and with less damage to the spinal

column. A number of cases of pressure paraplegia and damage to to the spine and cord from various causes, tuberculosis, gunshot injury, fracture, tumours, etc., have been operated upon by this method.

REFERENCES.—[1] "Therap. Gaz.," from "Rev. de Chir.," No. 11, 1899; [2] "Brit. Med. Jour.," Dec. 23, 1899; [3] "New York Med. Rec.," April 7, 1900; [4] "Brit. Med. Jour.," from "Lyon Méd.," Oct. 8, 1899: [5] "Therap. Gaz.," Nov. 15, 1899; [6] "Treatment," from "La Presse Méd.," May 17, 1899; [7] Ibid., May 17, 1899: [8] "Therap. Gaz.," July, 1900; [9] "Med. Rec.," from "Wien. Med. Blät.," Aug., 17, 1899: "Phil. Med. Jour.," Mar. 31, 1900: "Med. Press.," May 10, 1899, etc.: [10] "Phil. Med. Jour.," Sept. 1, 1900: Comm. by Hopkins; [11] Ibid., Mar. 31, 1900: [12] "Ther. Gaz.," Jan. 15, 1900: [13] "Med. Rec.," Oct. 6, 1900: [14] Ibid., Oct. 28, 1899: [15] Ibid., Oct. 28, 1899: [16] "Arch. f. klin. Chir.," Band lix, Heft 3; [17] Amer. Jour. Med. Sci.," Oct., 1899; [18] "Lancet," Feb. 10, 1900.

SPLEEN (Surgery of). *Walter G. Spencer, M.S., M.B., F.R.C.S.*

Splenectomy.—This operation is successful in cases of rupture, also in primary enlargement, splenomegaly, where leucocythæmia is absent.

Heaton[1] reports a successful case and gives references to previous ones. A boy aged nine, who had been run over was found collapsed and blanched without an external wound. There was dulness in the left flank which went on increasing, until there were signs of free fluid in the peritoneal cavity. The general condition got worse and therefore an operation was undertaken upon the diagnosis of rupture of the liver or spleen.

An incision into the epigastrium encountered much dark blood, but no free gas nor abdominal contents; the liver was normal, whilst the position of the spleen was occupied by a mass of blood-clot. On turning this out there was free hæmorrhage from the torn splenic vessels, which was controlled by large forceps. About one-third of the organ remained attached to the gastro-splenic omentum, the rest had been torn away and pulped. The pedicle was ligatured and saline fluid infused, also strychnine injections, but the patient was so near dead that a *sub-mortem* intussusception of the splenic flexure of the colon was caused, and this had to be reduced. The abdomen was closed without removing the rest of the blood. The patient had a very slow convalescence: at first there was abdominal distension with vomiting until the bowels were relieved, then the anæmia (hæmoglobin down to 40 per cent.) was very marked, along with much leucocytosis (up to 60,000 per 1 c.cm.), and slight left pleurisy. There was some enlargement of the lymphatic glands. The blood cells were unaltered, there was a marked increase of the large mononucleated white corpuscles, but a diminution of the small lymphocytes.

Ganz recommends splenectomy for idiopathic hypertrophy or primary splenomegaly, but considers that the operation is unjustifiable when leucocythæmia is present. There is marked enlargement of the organ with wasting and irregular temperature. In thirty-three cases there were nineteen deaths. But in one case, although there was temporary improvement and recovery from the operation, yet the patient died two months later with enlarged lymph glands and lymphatic œdema of the legs and tongue and finally delirium, the condition called pseudoleukæmia glandularis being present.

Subbotic, of Belgrade,[3] has done splenectomy eight times, seven patients being women and only one a man. In all there was a history of malaria, the enlarged spleen floating and its pedicle tending to twist; in one case the organ had become secondarily fixed by pelvic adhesions. The two deaths were attributed: one to intestinal obstruction existing before operation, the second to getting up on the tenth day without permission, immediately after the removal of the sutures. The wound burst open and the intestines prolapsed. They were washed and returned, but death took place three days later from sepsis.

REFERENCES.—[1] "Brit. Med. Jour.," 1899, Aug. 19; [2] Ibid., 1899, Oct. 28; [3] Ibid., 1900, i., Epit. 101.

SPRUE.

Synopsis.—(Vol. 1900, p. 479). Thin treated a case with **Strawberries**. Cantlie has given up prescribing milk and uses an **All-Meat Diet**. Lamb adds **Citrate of Soda** to **Milk**, 1 in 400, to remove the lime. Manson advises **Physiological Rest**, rest in bed, warmth and simple diet, milk being used at first. Bigg advises 5-grain doses **Yellow Santonin** in Salad Oil night and morning for a week with rest and milk diet.

STOMACH (Surgery of the).

Walter G. Spencer, M.S., M.B., F.R.C.S.

This subject, which has undergone such a development of late years, was dealt with at length in the previous volume of the "Annual." Mayo Robson,[1] in his lectures at the College of Surgeons, not only gave a most valuable and full review of the work of others, but added a large experience from his own cases.[2] He prefers to divide the abdomen into regions by two diagonals drawn from the ninth rib cartilage to the opposite anterior superior iliac spine, crossing one another in the region of the umbilicus, round which he draws a circle two inches in diameter to outline the umbilicus region (*see* reference, "Lancet," *Fig.* 1, p. 672).

Hæmatemesis after operations, especially the more severe kinds, is a very difficult matter for consideration. A capillary hæmatemesis ending fatally may follow an operation unconnected with the stomach.

Mayo Robson has seen it after operations for intestinal obstruction, tuberculous peritonitis, cholecystotomy, choledochotomy, hernia, ovariotomy, and simple exploratory laparotomy. In one case no general anæsthetic was used, merely cocaine, and the operation lasted only fifteen minutes; cholecystotomy was done for cancer of the common bile duct, yet violent hæmatemesis set in the day after and proved fatal. Nothing was found in the stomach *post mortem*, nor any peritonitis, nor other condition. Another case was also fatal without anything to account for it. Von Eisselberg[3] observed eight cases in three years. Three were cases of strangulated inguinal hernia, two strangulated umbilical, two excision of the rectum, and one malignant disease of the pharynx. In all the hæmatemesis was free; five died: (1,) An intemperate man, aged sixty, underwent excision of a cancerous rectum and died on the fifth day without vomiting or hæmatemesis. After death free hæmorrhage was found to have taken place from the stomach and there was blood in the contents of the small intestine: (2.) A man aged fifty was almost moribund from strangulated inguinal hernia; the cæcum was laid open, and for three days the fæces escaped freely. There was no vomiting nor hæmatemesis. After death there was found diffuse purulent peritonitis, and in the stomach about thirty recent erosions, two as big as a sixpence, which had bled freely. The duodenum was normal; (3,) In another case a man aged forty-two was operated upon for strangulated inguinal hernia, and the omentum was found deeply ecchymosed. He vomited over a pint of blood on the second day and died shortly afterwards. Recent ulceration of the stomach and intestines were found; (4.) A man, aged forty-three, had excision of a cancerous rectum, hæmatemesis occurred on the second day with tarry motions, and on the ninth day rather sudden death. There was a duodenal ulcer, the floor of which was formed by the lesser omentum, and the hepatic artery had been perforated; (5.) A doctor, aged twenty-nine, had excision of the palate, tonsil and cervical glands for cancer, including the ligature of the external carotid artery. On the eighth day a sudden collapse occurred with tarry stools and vomiting of bright red blood. After death a recent duodenal ulcer was found to have opened into a gastro-duodenal artery. Reichard[4] reports three cases in which fatal hæmatemesis occurred after operation without anything to account for it, and nothing could be found in the stomach or intestines. In the discussion Ewald added the case of a young man, aged twenty-one recovering from typhoid fever, who suddenly became collapsed and died with symptoms of bleeding from the stomach. No trace of ulcer

or any other cause to explain the bleeding could be found. Wieman [5] notes a case of recurring hæmatemesis in a young man after a strain, which ended fatally, but nothing definite was found *post mortem*. Mayo Robson treated his cases for portal congestion by **Calomel, Rectal Feeding**, and the avoidance of anything by the mouth. No operative interference is likely to do good. Three cases were operated upon unsuccessfully in Czerny's clinic for severe parenchymatous hæmorrhage from vicarious menstruation. From recent experience I can strongly support Mayo Robson's contention that acute hæmatemesis should be treated medically: absolute rest; rectal feeding; nothing by the mouth; small injections of morphine and atropine. Then in the interval between the recurring hæmorrhages a surgical operation will probably be successful—gastroenterostomy most probably, because it gives relief to gastric stasis, although excision of the ulcer or pyloroplasty also succeeds in selected cases.

Pyloric Stricture.—Mayo Robson in his second lecture emphasises the frequency with which pyloric stricture and gastric dilatation are set up by gall-stones, and their results. He had seen fifty cases, and looked upon gastric dilatation as a regular sequence of gall-stones and as an ordinary concomitant sign (see reference, "Lancet," *Fig.* 2, p. 730).

Koeppelin [6] reports a modification of pyloroplasty—he does not divide the mucous coat. One operation was for spasm, one for stricture, and one for cancer which it temporarily relieved. It may be questioned whether sufficient evidence as against a relapse was produced. The author considers his submucous pyloroplasty safer. Lamballe [7] thinks excision of a simple pyloric stricture the best treatment.

The Surgical Aspects of Severe Vomiting is the subject of an interesting address by W. H. Bennett [8]: especially noteworthy are his remarks on fæcal vomiting. In a certain number of cases it has not its usually bad significance, especially when relief is afforded, when there is no progressive distension or other warning symptoms, such as an increasing rapidity of the pulse. The bowel is in fact relieved of its accumulated contents. In a case recently under me, severe fæcal vomiting set in near the end of pregnancy with considerable distension. The latter subsided after vomiting, induced by administering hot water freely; even then there was no motion for some days, but after entire rectal feeding, the bowels finally began to move. It was a case of fæcal impaction from neglected constipation.

Syphilitic ulceration of the stomach is very interesting on account of the relief afforded by **Iodide of Potassium** (see "Medical Annual,"

1900, p. 530). Fisk found gummata in the liver when operating upon a sub-diaphragmatic abscess, which was secondary to a gastric ulcer.

Vomiting causing a Rupture of the healthy Œsophagus.—Bowles and Turner record this accident in consequence of a self-administered emetic of salt and water, and there is a reference to other cases, some of which have occurred without cause, while others have followed vomiting after an anæsthetic. The symptoms are pain in the chest, collapse, emphysema and pleural effusion. In a case known to me, a child who had not vomited before the anæsthetic was operated upon for the cure of hernia. This was followed by rapid hyperpyrexia and death in about a day, the wound appearing normal. There was a rupture of the healthy œsophagus into the posterior mediastinum.

Sarcomatous Tumour of the Gastrohepatic Omentum.—Pearce Gould[9] operated on a man aged thirty-eight for a large solid abdominal tumour which he had noticed for about a year. The tumour was shelled out and found to weigh 21 lbs., the stomach being displaced into the pelvis. It consisted of spindle-celled sarcoma with extensive hæmorrhages. The patient recovered and was alive and well without signs of recurrence four-and-a-half years later. In the discussion Bryant quoted a case of lipoma shelled out from the mesentery which weighed over 50 lbs., but this man eventually sank and died.

Duodenal Ulceration.—Schwartz,[10] Pagenstecher,[11] and Jaboulay[12] have recorded cases and discussed this difficult subject. In one series no symptoms have preceded the sudden occurrence of perforation. This is attended by acute pain in the epigastrium, especially below the right costal arch; there is prostration with a low temperature and accelerating pulse, vomiting is often absent, but there is rapidly increasing rigidity of the abdominal muscles, and there is loss of liver dulness. A correct diagnosis cannot be made from perforating gastric ulcer, but in two hundred and forty-two out of two hundred and sixty-two cases the distance of the ulcer from the pylorus was less than 2 inches; in other words it was in the upper third of the duodenum. An immediate laparotomy in order to suture the ulcer is indicated; exceptionally, cases of intestinal obstruction or of appendicitis may be accompanied by pain in the epigastrium, but an operation is always indicated.

A second series of cases has been those of chronic duodenal ulceration with recurrent hæmorrhage as seen by melæna or by the vomiting of blood mixed with bile. Here again the differential diagnosis from gastric ulcer will be impossible. Continually recurring

hæmorrhage, wasting and pain, point to an exploratory operation; also there is dilatation of the stomach when the stenosis becomes more marked. Subacute perforation may take place with the formation of perigastric or subphrenic abscess. A timely operation should be done. If suitable, duodenoplasty is performed on the lines of pyloroplasty, but where there is no definite stenosis, gastrojejunostomy is most likely to be serviceable, and this was strongly advised by Tuffier in the discussion on Schwartz's paper.

REFERENCES.—[1] "Lancet," 1900, i, 671, 747, 830; [2] "Brit. Med. Jour.," 1900, i, 562, 624, 694; [3] Ibid., 1900, i, Epit., p. 37; [4] Ibid., 1900, i, Epit., p. 50; [5] Ibid., 1900, i, Epit., p. 88; [6] Ibid., 1900, i, Epit., p. 2; [7] Ibid., 1900, i, Epit., p. 34; [8] Ibid., 1900, i, p. 691; [9] Ibid., 1900, i, p. 763; [10] "Therap. Gaz.," 1899, Nov. 13; [11] "Deut. Zeit. f. Chir.," Bd. 52, Hft. 576; [12] "Lyon Méd.," July 2, 1899.

STRABISMUS. *F. Richardson Cross, M.B., F.R.C.S.*

Panas[1] has investigated the lesions which give rise to traumatic paralysis of the ocular muscles. From an examination of the available records of the clinical histories and post-mortem examinations of such cases, and from the results of experiments upon the cadaver, he draws the following conclusions:—

(1,) The occurrence of separation of tendons from their insertion into the sclerotic which is accepted as the usual cause of paralysis resulting from direct injury requires proof, at any rate, in the larger number of cases.

(2,) In traumatic intracranial paralyses those of basilar origin are much the commoner, while those due to nuclear lesions constitute the exception.

(3,) From the age of ten years to adult life and even in old age the paralysis usually depends on fracture of the base, especially of the petrous bone; less often on an effusion of blood or pressure from meningitis. On the contrary, under the age of ten years the paralysis depends on lesions of the venous sinuses of the dura mater, more especially of the inferior petrosal sinus.

(4,) Congenital concomitant strabismus is not uncommon; it may be due to mechanical pressure on the head during birth, independently of instrumental labour, and is caused by meningeal hæmorrhages which implicate the intracranial portion of the nerves. In many cases it disappears before the age of two years.

For several years Landolt[2] has urged that in the routine operative treatment of lateral strabismus tenotomies should be abandoned in favour of advancements. Thus in concomitant convergent squint, instead of dividing one or both internal recti he *advances both externi*

because he claims to have found from measurement of the angle of fixation in squinting eyes: (1,) That before operation the movements in the direction of the squint are little if at all increased, while the excursions in the opposite direction are considerably limited; (2,) That tenotomy of any muscle diminishes its action upon the eyeball without increasing that of its opponent; (3,) That advancement of a weak muscle tends to restore to the eye its normal excursion without limiting its mobility in the opposite direction. He advises that in manifest strabismus the appropriate muscle should be advanced in both eyes as he considers that the weakness is always binocular and has found that such double operation never causes over-correction. When the squint is of high degree he resects part of the tendon of each of the muscles, while in extreme cases it is sometimes necessary to supplement the advancements by a subsequent tenotomy of one or other of the opposing muscles. In latent strabismus Landolt rarely finds surgical interference necessary, but when he does operate he advances one or other of the defective muscles.

Within the past year or two these views have been gaining ground among English surgeons, and Fergus [3] has written advocating advancement in preference to tenotomy in the treatment of convergent squint. He claims that the procedure is more rational, does not interfere with the function of the interni, and practically never leads to divergence, also that it is easily performed and causes less disfigurement than tenotomy.

While admitting the theoretical advantages to be obtained by advancement and fully recognising the absolute necessity for its application in the severer cases of strabismus, the writer still believes that tenotomy is simpler and causes less disfigurement, while the results obtained by its judicious employment leave little room for improvement.

Landoldt [4] has devised a new form of stereoscope for re-establishing binocular vision in cases of squint.

The instrument consists of two tubes each 12 cm. long, held side by side like the tubes of an opera glass but with a Cugnet's joint between them so that their axes can be made to converge or diverge. Each tube has at one end (the ocular) a convex lens of 8·5 D, the focus of which corresponds with its other end (the objective). The test objects are pairs of photographs of simple figures printed on unpolished glass, and are intended to be seen by transmitted (not as is usual by reflected) light.

To use the instrument a pair of photographs is placed in corresponding position, one at the objective end of each tube, and the

patient (wearing the glasses necessary to correct his refraction) holds the ocular end of the tubes in front of his eyes and looks through them at a good diffused light such as that from the sky. He will then see the pictures brightly illuminated unless the sensation produced by the image of the good eye is so strong as to overpower that of the other, when it can be modified by placing in front of the corresponding picture one or more pieces of ground glass or by means of an iris diaphragm. Having seen the pictures simultaneously the patient can make them coincide by changing the position of the axes of the tubes, after which he should cultivate his power of fusion by endeavouring to vary the inclination of the tubes and the amount of light passing to the good eye while still maintaining binocular vision.

In the examination of cases of latent strabismus it is important to determine the degree of ease or difficulty with which binocular single vision is attained. The tests which are ordinarily employed for this purpose by means of a candle flame and prisms with or without the addition of a coloured glass or a Maddox's rod are not very satisfactory, as in them the patient is confused by being placed under unnatural conditions. It occurred to George Bull[5] (Paris) when using the stereoscope for the treatment of squint according to the method of Javal,[6] that this instrument would also be useful in cases of muscular inefficiency, not only to develop the power of binocular vision, but also to measure the range of fusion.

The instrument which Bull uses is a Holmes's stereoscope, *i.e.*, one in which the test objects can be brought closer to or further from the patient's eyes by sliding them along a rod. The test objects consist of pairs of discs (one to be seen with the right eye and the other with the left) printed on a series of cards, each of which bears a number indicating in centimètres the distance between the discs on it.

Above the right disc is a small dot or cross called a controller, and below the left disc is a similar mark. When the discs are properly fused by the patient he sees but one circle with a controller above and another below. The controllers serve to assure us that the single disc observed is a composite or fused image seen by the two eyes working together, and they make the stereoscopic test superior in this respect to tests of fusion in which the two eyes look at a single object.

The rod upon which the card holder slides is marked in dioptres measured from the centres of the lenses.

As the convergence required for fusion of the discs varies with the number of the card and its distance from the lenses, it was necessary to make a scale to show its degree in every case. The one appended

(*Fig.* 24) has been drawn up by Bull on the basis that the stereoscope has lenses of 6 D, the centres of which are 86 mm. apart, that the centres of rotation of the patient's eyes are 65 mm. behind the lenses, and that his interpupillary distance is 60 mm. If the interpupillary distance is greater or less than this, it is easy to calculate the modification to be made in the scale, but for patients generally the angles of convergence recorded by it are approximately correct.

Each figure on the upper line of the scale indicates the card bearing the corresponding number, and the line descending from this figure shows by its position on every scale below the degree of convergence required for fusion of the discs of the card at the distance indicated. To the left of the zero of each scale the figures indicate degrees of convergence; to the right degrees of divergence. Example: when a patient fuses the discs of No. 8 card at 7 D (14·3 cm.) he is converging 1 degree.

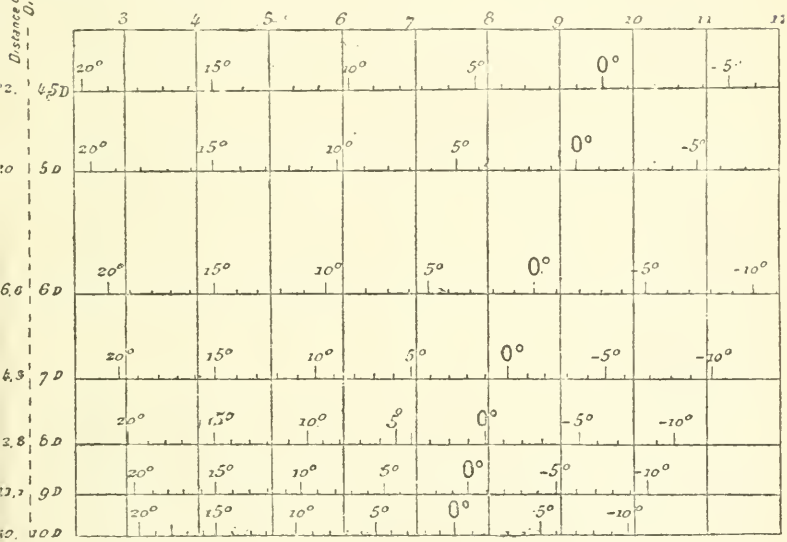


Fig. 24.—Table for measuring the degree of ocular convergence and divergence with the Holmes's stereoscope.

It is shown by the table that Holmes's stereoscope, with test cards numbered from 3 to 12, enables us to measure an amplitude of fusion of 30 degrees—namely, one extending from 20 degrees of convergence to 10 degrees of divergence. We seldom need to measure so high a

degree of divergence ; but it often happens that we wish to determine whether the patient can converge more than 20 degrees while fusing. For this purpose Bull has recourse to another instrument called the "stereoscope for exercises with crossed axes," or simply the "cross stereoscope." This is a Holmes's stereoscope without lenses or prisms, in which the patient looks through a diaphragm so placed that his right eye can see only the disc on the left side of the test card, and his left eye can see only the disc on the right. In using the the "cross stereoscope" Bull asks the observer to look through the diaphragm at a pencil, which he brings nearer and nearer till it is about half way between the patient's eyes and the test card. At that moment, if the patient is seeing the pencil single, he will observe that the discs of the test card come together in fusion, and his statement as to the position of the controllers will show whether he is seeing the card properly. If on removing the pencil the patient can continue to fuse the discs the card is brought closer until the nearest point at which he can do so is found when the degree of convergence can be read off on a scale which is marked on the rod of the stereoscope. With this instrument a convergence of 40° can be measured, which is sufficient for practical purposes.

It may be noticed that Landolt's stereoscope and Bull's method of testing for inefficiency of the ocular muscles are further applications of the principle of Priestley Smith's fusion tubes and heteroscope, as described in the "Medical Annual" for 1900, pp. 533, 534.

REFERENCES.—[1] "Trans. ixth Int. Cong. of Ophth.," p. 37 ; [2] "Arch. d'Opht.," March and Dec." 1895, July, 1896, etc. : [3] "Glasgow Med. Jour.," Sept. 1898 : [4] "Trans. ixth Internat. Cong. of Ophth.," p. 86 ; [5] "Brit. Med. Jour.," Sept. 23, 1899 : [6] "Med. Ann.," 1900, p. 531.

SUPRA-RENAL CAPSULE (Tumours of). (See "Kidney.")

SYPHILIS. *C. F. Marshall, M.D., F.R.C.S.*

TREATMENT.—Mr. Jonathan Hutchinson gave his present opinion on this subject in a lecture at the London Polyclinic (March 28th, 1900). He considered the disease to be milder than it was formerly. Mercury, although the universal antidote, was not absolutely essential, since syphilis might die out without treatment. Excision of the chancre might be effectual if done within a week or a fortnight after contagion, by rendering further symptoms milder, if not preventing them. He advised **Mercury** to be given as early as possible, and before secondary symptoms had appeared. If mercury was begun from the fourth to fifth week after contagion, and continued long enough, no further symptoms might occur. He advised the continuous

method of administration instead of the intermittent or the symptomatic methods. The mode of administration did not matter much, but inunction and injection were objected to on the grounds that the dose of mercury given in these ways was uncontrollable. He preferred the internal administration of 1 grain of gray powder in pills, three times a day for a week, increased to five pills a day in a fortnight. The mercury was combined with ¼ grain of opium. The treatment should be continued for a year. Iron and quinine were useful adjuncts to the treatment. Iodides should be given separately, and not combined with mercury.

Mr. Alfred Cooper[1] has also recently given his views. He draws attention to the frequent difficulty in diagnosis of the primary sore. He differs from Hutchinson in placing no reliance on excision or destruction of the primary sore, holding the view that induration is a local manifestation of constitutional infection. Mercury should be avoided in phagedenic sores, the proper treatment of which is the hot bath. As regards methods of administration, Cooper recommends a pill of **Tannate of Mercury,** which has the advantage of passing unchanged into the duodenum, thereby avoiding gastric irritation. It is also said to cause less stomatitis than other preparations. It can be given in doses of 1 to 2 grains in a pill, and thrice daily. Cooper is also in favour of inunction and intramuscular injections of **Sozoiodol of Mercury** (⅛ grain once a week) in certain cases. He advises a two years' course of mercury.

Radestock[2] draws attention to a new preparation of iodine, called **Iodipin**, which is a 10 per cent. combination of iodine with oil of sesamum. The compound is said to be very stable. It is well borne in doses of 40 to 50 grammes, and is said not to cause any marked iodism or gastric troubles. Its action is said to be more lasting than that of potassium iodide. It is recommended in tertiary syphilis, and may also be given by inunction. Radestock reports two cases in which iodipin gave good results. The first was a man of forty-five, with a pigmentary syphilide, which had resisted prolonged treatment by potassium iodide and local mercurial applications. The affected parts were treated by inunctions of iodipin (3 to 5 grammes) combined with internal doses of 20 to 30 grammes. In three weeks the spots had disappeared. The second case was one of hereditary syphilis, with double keratitis, choroiditis, and ozæna. Under iodipin the choroiditis cleared up and the cornea was much improved. Klingmüller[3] has given iodipin by subcutaneous injection in tertiary syphilis. Twenty c.cm. of a 10 per cent. solution were used every other day. The injections were painless and no evil effect followed.

Hyrgolum, a colloidal form of mercury soluble in water, has been used by Friedman[4] as a substitute for unguentum cinereum. A 10 per cent. vaseline preparation was used for inunction. It is said not to produce cutaneous irritation or salivation.

Medicated Shirts have been employed by Blaschko[5] in the treatment of syphilis. The shirt is made of coarse cloth, impregnated with a 90 per cent. mercury ointment. The shirts are worn next the skin night and day for four weeks, when the mercury is absorbed.

Syphilis of the Brain.— F. W. Mott[6] publishes the important results of his researches on cerebral syphilis and general paralysis of the insane, carried on during the last four years at the Pathological Laboratory of the London Counties Asylums. According to Mott, cerebral syphilis may appear within the first three years after infection. Four patients showed it in the first year, seven in the second, and six in the third year. Recent observations from the clinics of Fournier and Neisser support this statement. In nearly all cases of basal syphilitic meningitis, post-mortem evidence shows the presence of spinal meningitis, the brain symptoms having during life overshadowed the spinal ones. Mott points out that the lesions of syphilis may result in irreparable destructive changes in the so-called "silent" areas of the brain (psychological areas) before diagnosis can be made, and in this respect no restoration of function can be hoped for. He concludes that "of all the causes of insanity none writes with such a broad and indelible hand as syphilis."

With regard to *general paralysis of the insane*, Mott inclines to the view that both tabes and general paralysis are parasyphilitic affections. The strongest evidence of syphilis being the chief cause of meningo-encephalitis is shown in the ancestry of juvenile general paralysis, the records of Mickle, Alzheimer and Thiry showing that over 90 per cent. have syphilitic parentage. Mott comes to the same conclusion from a collection of twenty-two cases of juvenile general paralysis.

Syphilis, influence on Tuberculosis.—Monteverdi[7] reports an interesting case of a young man with signs of early phthisis (bacilli in the sputum, hæmoptysis and fever), who contracted syphilis a month after observation. All the signs of phthisis steadily improved after the appearance of the syphilitic roseola, and did not recur. The patient was in good health six years afterwards. The author is of opinion that the beneficial action may be due to the favouring of fibroid changes or partly by the interaction of the two toxins.

REFERENCES.—[1] "West Lond. Med. Jour.," Apr., 1900; [2] "Therap. Monat.," 1899, p. 551; [3] "Berlin. klin. Woch," 1899, p. 540; [4] "Amer.

Jour. of Cut. and Gen-Urin. Dis.," Dec., 1899; [5] "Berlin. klin. Woch.," Nov. 13, 1899; [6] "Arch. of Neurol.," from the "Path. Lab. of the Lond. County Asylums," vol. i, No. 1; [7] "Gaz. deg. Osped.," July 30, 1899.

SYPHILIS OF TRACHEA. (See "Trachea.")

TABES DORSALIS. (See "Locomotor Ataxia.")

TEETH (Extraction, etc., of). (See also "Abscess due to Teeth.")

J. G. Turner, F.R.C.S., L.D.S.

The instruments used are forceps and elevators.

General Directions in the use of Forceps.—Stand on the right side of the patient. Hold the forceps lightly, placing the thumb just between the handles, near the blades to regulate pressure, and slide the blades over the crown of the tooth: push them well up in the *axis* of the tooth, sending the blades *between the tooth and the bony socket*: then, and not till then, tighten the hold on the blades. Depress the handles of the forceps if taking out a lower tooth; if an upper, move them outward; then reverse the movement, *i.e.*, elevate the handles if a lower, and move inwards if an upper, and again moving the handles down or out as the case may be, combine the movement with a pull, and the tooth should come out.

Never attempt to pull a tooth straight out of its socket.

The forceps are held lightly at first to avoid crushing or breaking off the crown at the very commencement, and the blades are pushed well up between the tooth and the socket to get a hold of the tooth *beyond the crown*, thus diminishing at this stage the risk of breaking off the crown, and to start the separation of the bone from the tooth. This separation of bone from tooth is further effected by the outward and inward movement given to the tooth by the movements of the handles above described, the outward movement being given first, since the outer alveolar wall is usually the weaker and more readily "started."

In the case of the lower wisdom, the inner is the weaker, and the order of movement is reversed.

Never be in a hurry.—Movements such as just described will take out teeth which no amount of direct pulling would move.

There is another movement, that of rotation, which is useful in the case of special teeth, depending on the *shape of their roots.* This movement depends on a conical root for its success, and the upper central incisors and supernumerary teeth are the teeth most adapted for it; other teeth in which it is sometimes useful are the lower first bicuspids and the upper canines, but if the roots are more flattened

than usual, or the bone harder, the manœuvre is likely to result in fracture of the tooth.

When extracting a lower tooth seat the patient in a low chair, when an upper use a higher seat, but never let the head be out of control of the arms.

In extracting teeth from the right mandible, stand to the right of and *behind* the patient.

General directions in the use of Elevators.—Stand at the right of the patient; for right lower teeth at the right and behind. Take the handle in the palm, with the fore-finger extended along the back of the blade to act as a guard in case of slipping. Push the instrument well down between the tooth to be extracted and the next one, if possible, between the tooth and its socket, so as to get a "hold" as low down the tooth as possible, turn the wrist so as to give the instrument a quarter turn, and at the same time depress the handle, when one edge will then rest on the neighbouring tooth and take that as a fulcrum, while the other will cut into the tooth to be extracted, and thus taking a hold will lever it out. The last part of this description applies to the "straight" elevator.

When using a right or left curved elevator the movements will be the same; but the instrument will push the tooth out before it, without taking a hold on it. The movements may have to be repeated, pushing deeper each time; the tooth being first loosened and then gradually extruded.

Forceps should be used where possible, since elevators are liable to injure neighburing teeth and bone.

Always try to protect surrounding parts from injury by placing two fingers, or a finger and the thumb of the other hand, one inside and one outside the alveolus of the tooth to be extracted; this applies specially to the use of the elevator.

Always keep the edges of the blades, both of forceps and elevators, sharp.

Difficulties of extraction of Normal Teeth.—These lie in the shape of the roots, the state of the bone round them, and their position (accessibility) in the mouth.

Shape of Roots.—The roots of upper and lower front teeth present little difficulty, but it must be remembered that teeth with a single conical root will often "jump" when the blades are forced in and fly out with astonishing force.

This is especially the case with the lower first bicuspids, and render them rather nasty teeth for extraction under an anæsthetic.

This accident may be prevented by guarding the tooth closely with two fingers of the other hand.

The fang of the first upper bicuspid is generally bifid, and the fangs of the first upper molar may diverge widely or curve in on to each other, thus rendering in all these cases fracture of a small portion of the root likely. The only way to prevent such an occurrence is to be steady, and loosen the tooth well from the bone.

The fangs of a lower wisdom often curve round and run backwards, apparently not having room to elongate downwards. Using a straight elevator this will be no obstacle as the direction it gives to the tooth is on such a curve, but if difficulty is found with forceps this must be remembered, and an elevator tried.

Narrow fanged teeth are far more difficult of extraction than teeth with big fangs—such fangs may be looked for in upper bicuspids and first molars, and in lower first and second molars.

This depends on the fact of their being held in by thick masses of bone between and around the fangs, hence the difficulty of their extraction depends on the *state of the bone around them.*

If this is young and soft, or small in amount, extraction is easy; hence the teeth of young adults, in whom the bone is still soft, may be with safety removed rapidly. But when the patient is older and the surrounding bone harder the extraction is more difficult, and must be more deliberately done.

Teeth standing alone are always difficult of extraction on account of the consolidation of the bone round them following the loss of their neighbours.

Since an abscess at the root of a tooth is accompanied by rarifying osteitis, extending along the socket, an abscessed and tender tooth is usually easy of extraction, though very painful from the state of the parts.

Position and accessibility of a tooth refer chiefly to the lower wisdoms—though special difficulties may arise in crowded mouths—the patient being often unable to open his mouth. In such a case the mouth may be opened under an anæsthetic, or in the case of a lower tooth a pair of "straight" lower molar or stump forceps (described later, requiring but little room) may be slid along the teeth till felt to be in position, and the tooth seized and taken out. This is most likely to succeed when there is an abscess round the tooth, which is then looser than normally.

Extraction of Stumps.—In extracting roots feel the edges, and keep the blades in the axis of the root. The difficulties of extracting stumps are often greatly overrated, both by medical men and the public,

chiefly because "there is nothing to get hold of," but if the edges can be seen and felt there is all that is wanted to guide the blades, and if they are well pushed up before hold is taken most stumps will be successfully extracted.

Difficulty arises : —

(1,) When the root is exostosed, in which case the root may often be felt to be loosened, but appear to be sucked back at each attempt at extraction. The root and the bone form a sort of ball and socket joint, and the only way to get it out is to so far separate the bony sockets as to allow room for passage. This may be done by pushing further in with the blades of the forceps, or pushing an elevator down on one side so as to prise aside one wall of the socket.

(2,) When the stump is broken off far in the bone beyond the level of the gum, or so decayed as to give no firm tissue to hold in its visible and more accessible parts. The only way to get out such a root is patiently to clean out and dry the socket so as to make a good inspection of it, and to probe round it with a fine sharp-pointed steel probe which will enter the softer bone and cause some feeling, but will be arrested dead by the hard dentine of a root : then with the information thus gained apply forceps, and push well up before taking hold.

A root that is softened by decay, and crushes up between the blades of the forceps, may be got out in the same way ; but the soft part must first be removed by scraping with a steel instrument till hard dentine is reached, or the forceps carefully driven far up before any closing is tried. If on cautiously closing no hard tissue is felt the forceps must be driven on until it is felt that they close on to hard tissue.

(3,) In the case of molar teeth when the crowns have been lost, but the roots are left united. When this occurs in a lower molar the only point to be remembered is to put the blades of the stump forceps on *one* root only, and pay attention first to that alone. In the case of upper molars, if the palatine fang stands up well, the ordinary molar forceps may be successful ; if this is not feasible look to see which of the buccal roots is better in a transverse line with the palatine, and drive the root forceps well up so as to grasp these. If this fails, try to get a hold of the buccal root which seems more separate from the rest ; it will sometimes break off from the rest if grasped alone, and leave an empty socket, into which one blade may be put, while the other is passed inside the palatine fang, the intervening bone being crushed as hold is taken. In this way one or both of the remaining fangs will be readily got out, and a broken down tooth

which was immoveable as a whole will often be easily extracted if taken piecemeal.

Since there is no nerve trunk to be broken, a root that is not inflamed usually causes but little pain in extraction; and the smaller it is, and consequently the less its bony hold, the less the pain. Roots that are unused are treated by the jaws as foreign bodies, and gradually extruded: hence, if it be remembered that the diameter of a root gets less as the apex is approached, an idea may be formed of how little pain is to be expected by noting the size of the exposed surface. An upper wisdom tooth, usually having confluent conical roots, often shows a large surface, but is seldom a long-rooted tooth or firmly implanted, and hence extraction of its "stumps" gives, usually, but little pain.

Extraction of Children's Teeth.—If from any cause it becomes necessary to extract temporary teeth some while before the time for their natural shedding, care must be taken, especially in the case of the molars, not to push too far up or down. It not infrequently happens that the bicuspid developing just underneath is also extracted when a temporary molar is too vigorously attacked. If the tooth has to be extracted later, do not be deceived by the appearances of the firmness—the roots will be well advanced in absorption, and the extraction will be practically painless.

Anæsthetics for Extraction.—Local anæsthetics are of but little value, the glowing accounts given of their success being, in the main, unreliable. In many cases they act by suggestion, and in others they have been used on teeth or stumps which, as above explained, would in any case give but litle pain.

The difficulty of rendering even the gum anæsthetic by *rubbing* on cocaine or a local anæsthetic is considerable: the difficulty of *injecting* any fluid between the gum and the bone is great, and generally ends in its being deposited in the tissues of the alveolar-buccal reflection; and even if it be injected beneath the gum it has yet to be absorbed by the bone to reach the nerves of the teeth. The uselessness of local anæsthetics on inflamed areas is almost absolute—all these circumstances combine to render local anæsthetics of no more than suggestive value in the extraction of teeth.

Of general anæsthetics *gas* is the anæsthetic *par excellence*. Since the sitting up position is the "position of election" for tooth extraction, chloroform is a dangerous drug, adding its own depressant action to the heart-difficulties entailed by anæsthesia in the upright position.

If longer anæsthesia is required, gas may be followed by ether, and the sitting position still maintained.

Gas anæsthesia may be prolonged by ten or twenty seconds, by admitting a little air with the gas ; or for longer periods up to five or ten minutes by the use of nasal inhalers, which are now sold by most instrument makers.

The average duration of pure gas anæsthesia is about thirty seconds : that of gas and air may run up to eighty, but fifty is an average.

Before giving gas the patient should be "prepared" as for a major anæsthetic, though less strictly, and should not come straight from violent exertion. Vomiting sometimes occurs under gas, especially with a nervous patient who holds his breath and refuses to breathe gas freely ; hence food should be limited to good beef-tea taken about two hours beforehand.

When actually about to take "gas" the patient must be made to undo everything that is buttoned or tied round the waist, chest, and throat. Men should undo the top button of the trousers.

Neglect of this precaution has led to almost fatal heart-embarrassment.

The patient should be comfortably seated with the body relaxed ; the air-way must be free, and all parts in one straight line, *i.e.*, the head must neither be too far thrown back nor depressed, either of which positions will interfere with the entrance of air through the larynx. The whole body must be placed so that when the prop is in position, blood or broken tooth will remain in the floor of the mouth and not pass backward.

The head should be supported by a rest under the occiput and upper part of the nape of the neck.

While the teeth are being extracted the anæsthetist must steady the head, holding it firmly from side to side for upper teeth ; and supporting the jaw below for lower unless he sees the operator is doing so himself, in which case he will make pressure over the front of the condyle of the side operated on, as in some cases this starts too far forward and dislocation results. Considerable control may be exercised by this manœuvre.

While the patient is coming round the anæsthetist must see that no blood runs backward to impede respiration or be swallowed, and if he has to push the head forward must remember to push the body as a whole, and not stop respiration by merely bending the head on the chest.

Let the patient come round quietly.

If gas is to be followed by ether, the ether takes up a fully anæsthetic stage, but do not give much air at first as the patient readily recovers the effect of gas.

Gas is usually looked on as a safe and practically harmless anæsthetic. This is a mistaken and dangerous view to take. Gas is often said to be a "heart-tonic." This is only true if suffocation is also a heart-tonic. The increased violence of the pulse under gas is, in part at any rate, due to the greater efforts induced in the heart by insufficiently oxygenated blood, and in many cases is followed by heart failure. The writer has seen temporary dilatation of the heart, and accompanying incapacity for, and breathlessness on exertion in several children specially watched ; and in adults coldness of extremities and giddiness, as the result of gas administration.

Patients should therefore be instructed to lie down, or, at least, "take it very easy" for the rest of the day after gas. Since, then, gas lays extra strain on the heart, unfit subjects are : (*a*,) People with degenerated arteries ; (*b*,) Fat people ; (*c*,) People with hearts already embarrassed by pulmonary or other trouble.

In these cases the admission of air does away with a great deal of, but not all the asphyxial strain.

Much is said about the danger of foreign bodies passing into the larynx under gas anæsthesia, but in the writer's opinion heart-failure is a far greater danger, and is to be guarded against by seeing that the air-ways are free, that all external impediments to respiration are removed, and by admitting regulated quantities of air with the gas.

Selection of Instruments.—The varying shapes of teeth make it impossible to do with less than a certain number of instruments.

The following list is suggested by the writer as a minimum outfit :—

Upper molar forceps, right.

Upper molar forceps, left (*Fig.* 25).

Upper root forceps, curved (*Fig.* 26) (with curve of handle in opposite direction).

Lower hawk's-bill molar forceps (*Fig.* 27).

Lower hawk's-bill root forceps (*Fig.* 28).

One straight elevator (*Fig.* 29).

To these may advantageously be added :—

Upper straight root forceps (*Fig.* 30).

Upper bayonet root forceps (*Fig.* 31) ; useful for upper wisdom teeth.

Straight lower molar forceps (*Fig.* 32).

Straight lower root forceps (*Fig.* 33)

Right and left curved elevators (*Fig.* 34).

Forceps should be as light in construction as is consistent with strength—do not get forceps with thick heavy blades.

The same pair of upper molar forceps may be used for the first and second upper molars.

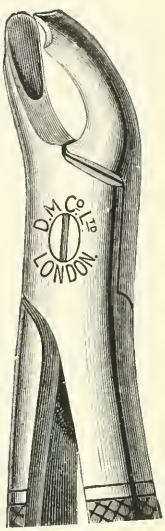


Fig. 25.

Fig. 26.

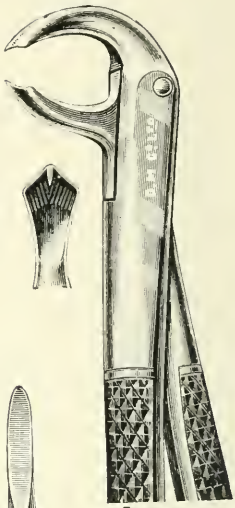


Fig. 27.

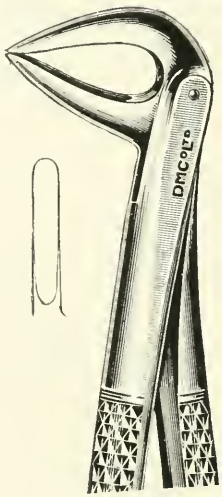
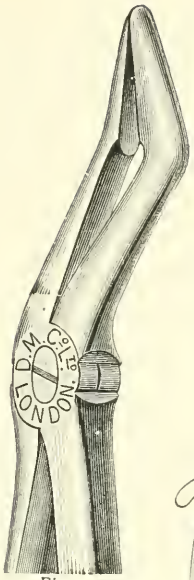


Fig. 28.

Fig. 29.

Fig. 30



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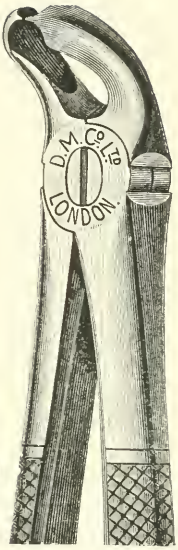

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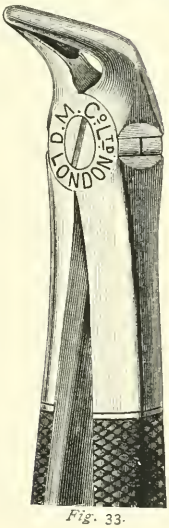

Fig. 33.

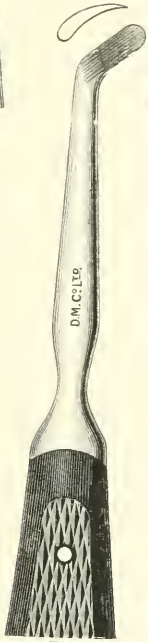

Fig. 34.

For the third upper molar, the rest of the upper teeth and *all* the temporary teeth, and for roots, the same curved pair of upper root forceps may be made to serve ; but it is better to add a pair of straight root forceps with smaller blades to use for lateral incisors, small bicuspid roots, and temporary front teeth. Upper bayonet forceps are useful for upper wisdom teeth that are set far back and hidden by the molar in front.

One pair of lower hawk's-bills will serve for first two lower permanent molars, and for lower temporary molars if large. The lower hawk's-bill root forceps will serve for bicuspids, canines and incisors, and for wisdom teeth, as well as for roots and for all the temporary teeth. Straight lower molar and root forceps are, however, especially useful when the mouth cannot be opened far, as they take up far less room, and need no stretching of the cheek.

The straight elevator is useful in the case of the lower third molar, and for "starting" any tooth which seems immoveable to the forceps.

The curved elevators are especially useful when one root of a lower molar has come away, leaving the other in. The blade should be thrust to the bottom of the empty socket and through the bony septum, and the root forced up by the turn of the wrist and levering movement above described.

Crown, Bar, and Bridge Work.

The dental practitioner is daily asked by both medical men and the public whether he does Crown, Bar, and Bridge work, and the question is, as often as not, accompanied by an inuendo that this special form of so-called American dental skill is beyond the powers of mere British dentists.

Perhaps it need hardly be remarked that British dentists are as skilful as their American confrères, and that, as in other professional callings, those who most loudly acclaim their methods and skill, and disparage those of others, are themselves but partial judges of a many sided question.

However this may be, it would have been far better for the majority of patients who have suffered the insertion of Bar and Bridge work, that this form of supplying dental deficiencies had never been invented ; while even simple single crowns are often far from being unmixed blessings.

The reason of all this lies in the all but utter impossibility of cleaning these fixed artificial tooth-substitutes.

This will be appreciated when the nature of these appliances is understood.

A "crown," whether "all gold," or "porcelain faced," hollow or solid, is fitted on to a root by the adaptation to the root of a tightly-fitting metal collar, or by means of a pin cemented into the canal of the root ; or by both means combined.

From the diagrams it will be seen that in either case a joint must be made between the crown and the root, and it is almost an impossibility to make such a joint as shall afford no lodgement to *débris* or passage for moisture, and if a porcelain front is used another joint

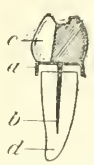

Fig. 35.—Section of a crown tooth showing : *a*—collar ; *b* pin ; *c*—porcelain face ; *d*—root.

Fig. 36.—Section of a crown tooth depending for fixation only on a pin ; *c*—gum and alveolus.

Both slightly separated rom the root for purposes of illustration.

is introduced. Still, if the collar can be thrust up well under the gum the joint will be so far below the surface that *débris* does not easily get down to it, while if a simple joint be placed high above the level of the gum as in *Fig.* 36, it can be more readily kept clean.

If two roots separated by a toothless interval are crowned, and the crowns joined by a bar, to which are soldered porcelain teeth or metal blocks, to provide a masticating surface, we have a piece of Crown, Bar, and Bridge work.

Fig. 37 shows the simplest and most easily cleansible form of such work. It is all of metal, and the intervening "bridge" is free of the gums, and rounded on the gingival aspect to allow the passage of cleansing silk.

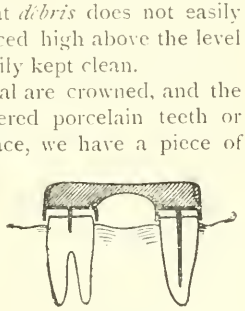

Fig. 37.

It is obvious that in even so simple a "piece" as is shown here, the mechanical difficulties of making close and smooth joints are very great—a very slight want of parallelism between the two roots will make perfect jointing all but impossible—though an intelligent patient may be trusted to keep such a piece clean in its other parts.

But there are operators far more ambitious than this, and patients are fitted with even whole sets, supported on so few as four roots, with

porcelain fronts resting on the gums, backed with gold; but leaving what are styled "self-cleansing" hollows on the lingual aspect in some cases; resting squarely on the gums in others, on the plea of obtaining support, and relieving to some extent the overworked roots.

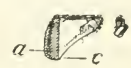

Fig. 38.—Section of Bridge work in molar region showing "self-cleansing hollow:" *a*—porcelain front; *b*—gold masticating surface; *c*—self-cleansing hollow.

These operators will devitalise teeth to obtain hold for a pin, or grind sound teeth into a cylindrical shape which will admit of their putting on a cap (hollow crown) in order to get supports for the "bridges."

Such pieces look very beautiful when nicely polished in the workshop, and when first put in, but soon become inexpressibly dirty, and are liable to be rendered wholly useless if one of the supporting teeth or roots becomes septic, owing to access of moisture through a leaking joint; or inflamed from the over-strain of too many attached teeth. Their insertion is, in fact, indefensible, and sound teeth should never be cut up or divitalised to afford hold for such pieces.

Attempts at making *removable bridge work* have not hitherto been very successful, owing to the small size of the material (teeth or roots) to be worked on, and the futility of treating teeth or roots as if they were blocks of inanimate matter, devoid of all vital connections.

Briefly, crowns and simple bridges, as *Fig.* 37, may be made so as to be kept healthily clean—elaborate bridges, unless removable, can never be healthily clean for long after insertion; and the man who recommends their insertion must undertake the responsibility for very expensive work which may confer benefit of but short duration, and ultimately be a source of much harm to the patient.

TENDON LENGTHENING IN CONDITIONS LIABLE TO FOLLOW FRACTURES.

Priestley Leech, M.D., F.R.C.S.

Two interesting papers on this subject have appeared during the year.

Page[1] reports a case of Volkmann's ischæmic paralysis following a transverse fracture of the lower end of the humerus. Massage, electrical treatment and movement were all tried without any benefit.

Immediately below the fold of the elbow the pressure of the end of the splint had caused a superficial slough, which had separated, leaving an open sore which had healed by granulation; the scar from this was very tender, and there was also tenderness of the whole anterior surface of the forearm, so that the child could scarcely bear to have his limb examined. There was extreme flexion at the wrist, and the

fingers were flexed into the palm ; extension of both fingers and wrist was hardly possible even with much force, but the joints were clearly unaffected. Strong flexion of the wrist had but small influence over the extensibility of the fingers. Anæsthesia was partial, only involving the ulnar distribution in the hand, and there was some suspicion of wasting of the first dorsal interosseus. The flexor muscles felt peculiarly unyielding to pressure, and decidedly firmer than natural ; there were no other signs of median, ulnar, or musculo-spiral paralysis. Page thought the condition was without doubt due to splint pressure.

Lengthening of the superficial and deep flexor tendons was done, but little improvement as regards motion was at first visible, but under electrical treatment in eleven months much improvement occurred, so that the forearm could be completely extended, the wrist and hand could be voluntarily put in the extended position, flexion of the fingers was easy, and the little patient could make a fist. At first there was reaction of degeneration of the muscles of the forearm. As to its exact cause, Page thinks it is due to the combined influences of pressure, fixation, and ischæmia. He says the cases are rare.

Fig. 39.

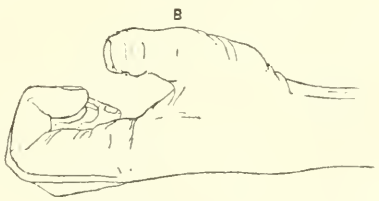

Fig. 40.

Littlewood describes a similar condition in two cases of fractures about the elbow joint. He says he has seen at least ten cases during the last twelve years (Page had seen only three cases). The deformity is this : when the wrist is extended, then the inter-phalangeal joints of the fingers and thumb (*Figs.* 39, 40) are strongly flexed so that the tips of the fingers touch the lower part of the palm, and no reasonable amount of force appears to be capable of straightening them, but as soon as the wrist joint is flexed to a right angle (*Figs.* 41, 42) then the inter-phalangeal joints can be easily extended.

In one case there was thought to be some ulnar anæsthesia. It appears always to occur in children after some severe injury about the elbow-joint, and generally after a fracture separation of the lower

humeral epiphysis: Littlewood has once seen it after a dislocation of both bones of the forearm backwards. The cause of the deformity, he believes, is primarily in the muscular portions of the flexor muscles of the forearm.

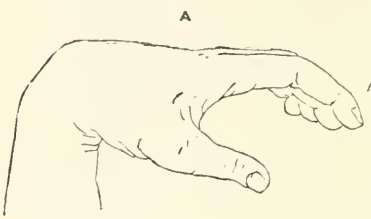

Fig. 41.

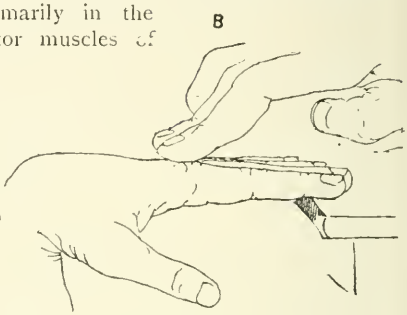

Fig. 42.

If the histories of the cases are gone into it will be found that the injuries have been severe and that the flexor muscles have been torn, possibly by the displacement of the forearm backwards with the lower end of the humerus. The torn muscle is replaced by fibrous tissue, and this contracting is responsible for the deformity. A lump varying in size can be felt in the flexor muscles in the upper third of the forearm, and it has been present in all the cases which he has seen. He does not believe that splint pressure has anything to do with the causation of the deformity. In some of the cases pronation is limited and in others there is deformity about the lower end of the humerus, the most serious being the presence of a mass of bone at the inner side preventing flexion of the elbow; the removal of this mass generally produces good results. Lengthening of the flexor tendons (*Fig.* 43) was done in both the cases described with good results. Massage was employed daily

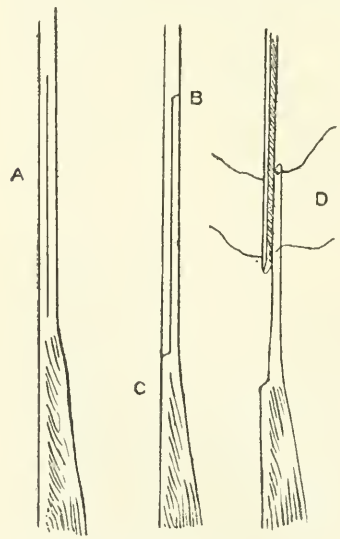

Fig. 43. Method of lengthening tendons.

REFERENCES.—[1] "Lancet," Jan. 13, 1900, p. 83; Ibid., Feb. 3, 1900, p. 290.

TETANUS. *Graeme M. Hammond, M.D., New York.*

Lambert[1] in an excellent paper on this subject summarises the most approved treatment as follows. There are three indications to be followed: (1,) The speedy elimination of the poison; (2,) The administration of physiological antidotes to counteract the poison of the body-cells; (3,) Chemical antidotes which change the poison by destroying it or rendering it inert, and thus prevent, retard, or arrest its action. To fulfil the first indication we must increase the action of the kidneys as the tetanus toxin is eliminated by them. The thirst of tetanus patients is usually excessive; it is best therefore to give them an abundance of milk or water if they are able to swallow. Sahl reports that in one of his patients he used with advantage subcutaneous injections of salt solution. The best physiological antidote is **Chloral**, as it diminishes the intense reflex excitability of the central nervous system. **Bromides**, **Physostigmine**, and **Antimony** act in an analogous way. The intense clonic convulsions and the sudden spasm of the glottis and respiratory muscles are the features to be dreaded in tetanus. **Amyl Nitrite** should be kept constantly at the bedside, and if such a spasm occurs a drop or two should be applied to the nasal mucous membrane. **Morphine** produces sleep and relieves the pain of the convulsive seizures. Antimony should be given combined with morphine, each $\frac{1}{8}$ or $\frac{1}{6}$ of a grain every two hours. This combination controls the spasms and may be continued for two or three days. Controlling the spasms with anæsthetics is not recommended, as their use is not without danger.

The antitoxic antiseptics, such as kresol, carbolic acid, and iodine, cannot be safely injected into the body in sufficiently large doses to destroy the tetanus toxin. Bacilli reports several cures following the subcutaneous injection of 1 per cent. solutions of **Carbolic Acid**. This treatment may have some effect, but the toxic action of carbolic acid is certainly to be feared. The **Antitoxic Serum** is certainly a most efficient antidote. We are able to calculate accurately the amount necessary to render inert the action of any given known dose of tetanus toxin. But because of the particular action of toxin we cannot allow too long a period to elapse after its injection before we inject the antitoxin. A minute amount of antitoxin may be sufficient to prevent toxic action, if both are injected simultaneously, but, as time goes on, it may take a thousand or ten thousand times as much. In using the serum intravenous injections will act much more surely and quickly, and should be given when possible; 20 c.c. to 50 c.c. should be given

as the first dose, followed twelve hours later by 20 c.c. more. From 10 c.c. to 20 c.c. should be given every twelve to twenty-four hours later until the spasms cease. In children half this dose should be given. The local and physiological remedies already mentioned should never be omitted, for it is only by employing every means in one's power that we can hope to overcome the terrible virulence of the tetanus toxin.

REFERENCE.—[1] "Med. News," July 7, 1900.

THIGH (Amputation of). *Priestley Leech, M.D., F.R.C.S.*

Dr. Hilgenreiner[1] describes two methods of osteoplastic intercondylar amputation of the thigh. Ssabanejeff's method is as follows: An anterior flap is outlined extending one inch below the tuberosity, and a posterior flap shorter by one and a half inches; the joint is opened from behind. The condyles of the femur are sawn across and a segment of bone to correspond with this surface is sawn out of the head of the tibia and left in contact with the anterior flap; this osteocutaneous flap is turned back against the femur and sutured. Abrashanow obtains his bone segment from the posterior half of the head of the tibia, the anterior flap being made shorter on this account than the posterior.

The advantages claimed for these methods are: (*a*,) Primary closure of the medullary canal by a bony flap; (*b*,) The supporting surface of the skin is free from any cicatrix; (*c*,) The skin bearing the weight and pressure of the stump is in natural relation to the transplanted bone; (*d*,) The preservation of the tendinous insertions of the muscles of the thigh is supposed to prevent in part an atrophy of the muscles. He says the disadvantages of Gritti's operation are the size of the patella and the section of the femur vary so that the patella is given to dislocation; that the retained synovial bursa and membrane of the joint frequently give rise to trouble and that the cicatrix resulting from the incision is in the pressure line of the stump. He formulates the choice of an amputation in injuries of the leg as follows: If there is sufficiently healthy skin a high amputation of the leg; if not, and the head of the tibia is healthy, the Ssabanejeff-Abrashanow method is in place; if this fails Gritti's method is to be considered alongside of the transcondylar (Carden) or supracondylar (Stokes) methods.

REFERENCE.—[1] "Beiträge z. klin. Chir.," Band xxiv, Heft 3.

TIC DOULOUREUX. *Græme M. Hammond, M.D., New York.*

Dubois[1] refers to successes in the treatment of this disease with the **Constant Galvanic Current** recorded by Onimus, Legros, Niemeyer, Benedict, and Dalby, and reports a case in which this treatment

effected a cure. The patient was forty years old when the paroxysms of pain began and was treated medicinally for ten years without any relief. At the expiration of that time he began to receive electrical treatment. The positive pole, divided into three terminals, was applied to the supra-orbital nerve, the infra-orbital nerve, and at the mental foramen. The negative pole was placed on the neck opposite the superior cervical ganglion.

From 12 to 15 milliampères were passed for seven minutes. An amelioration of the symptoms at once began, and after a week's treatment he obtained absolute freedom from the attacks. The treatment was continued three times a week for a year. He refers to three other cases treated by the same method. One, the subject of five surgical operations, was not relieved; in the other two an apparent cure was effected; at any rate, an extraordinarily long remission of the pain resulted.

A very interesting communication is that of Bennett,[2] who reports eight cases and refers to two others who were cured or almost entirely cured by injections of **Osmic Acid** into the terminals of the three divisions of the trigeminal nerve. All of the cases were typical and severe in character. The technique of the operation is as follows: The nerve having been exposed at its termination by as small an incision as possible, which in the cases of the supra-orbital, infra-orbital, and mental branches, need rarely exceed half an inch in length, is hooked up for purposes of fixation. The solution of osmic acid (1·5 per cent.) freshly prepared, is injected by means of a sterilised hypodermic syringe, the needle of which is passed along in the substance of the nerve as far as it can be made to go. The total amount injected should be from 5 to 10 minims, and it should be introduced in two or three separate injections in order that the whole nerve may be as much as possible soaked in the solution. During the injection a pledget of sterilised gauze or wool should be firmly held against the orifice of the wound in order to prevent the escape of the fluid externally. The amount of the solution really taken up in the nerve itself must of course be very small, and the retention in the operation wound of what regurgitates from the nerve probably aids the treatment by its effect upon the nerve-ends exposed on the cut surfaces. The effect of the solution upon the soft tissues is an immediate blackening of them all, the blood which escapes becoming ink-like in colour. No hindrance to primary union follows.

REFERENCES.—[1] "Brit. Med. Jour.," April 14, 1900; [2] "Lancet," Nov. 4, 1899.

TINEA. (See "Ringworm.")

TONGUE (Removal of). *Priestley Leech, M.D., F.R.C.S.*

Duvoisin[1] has studied the blood supply of the tongue and flow of the mouth and he has come to the conclusion that in cases of tongue cancer ligature of the lingual artery does not give a sufficiently satisfactory hæmostasis. To obtain a bloodless field for operation it would be necessary to tie the facial and superior thyroid arteries as well as the lingual, or else tie the external carotid. He recommends the latter, and says it has been done by Quénu in several cases without bad results. Ligature of the external carotid is often easier than ligature of the lingual.

REFERENCE.—[1] Abstract in "Centr. f. Chir.," No. 46, 1899.

TONSILLITIS IN CHILDREN.

Henry Dwight Chapin, M.D., New York.

Dr. F. A. Packard[1] reports five cases of endocarditis occurring in the course of tonsillitis. There is a steadily growing assurance that acute rheumatism should be classed among the acute infections, and while the causative agent has not yet been found, our knowledge is in reality more definite in regard to this disease than it is in respect to scarlatina and many other well recognised infections. Four of the five cases reported give the histories of children fourteen years of age and under, who showed symptoms of endocarditis during and following the acute amygdalitis. In none of the cases was a bacteriological examination made.

Dr. E. Mayer[2] states that when certain forms of infectious diseases follow closely on tonsillar affection, the same micrococci may exist in the former as in the latter. After a study of diseases of the tonsils, the following conclusions are reached: (1,) Infection arises in the tonsil; (2,) Tonsillar affections are frequently serious in their sequellæ, and every step to prevent recurrent attacks should be taken; (3,) The existing tonsillar disease should be energetically treated; (4,) Careful examinations and treatment are absolutely essential in the interim; (5,) Following anginas, the heart and other organs should be examined from time to time.

REFERENCES.—[1] "Amer. Jour. Med. Sci.," vol. cxix, No. 1; [2] "Jour. Amer. Med. Assoc.," vol. xxxiii, No. 23.

TONSILS (Diseases of). *W. Milligan, M.D.*

Acute Follicular Tonsillitis.—Ingals[1] recommends the local application of a 50 per cent. solution of **Guaiacol** in oil of sweet almonds and internally the following:—

℞ Pot. Bromid.	grs 80	Tinct. Opii deod.	āā	℥j
Sodii Salicyl.		Cascara Cordial	ad	℥j

Sig.—℥j in water every four hours.

Rheumatic Tonsillitis.—Bertram Abrahams[2] after an exhaustive study of a large series of cases tabulates the following conclusions:—

(1,) The more common varieties of rheumatic sore throat fall into two main categories, faucial erythema and tonsillitis proper.

(2,) Faucial erythema is most common in adults, rheumatic tonsillitis in children, in whom it usually assumes the follicular type, quinsy being more frequent in older subjects.

(3,) Faucial erythema is an initial manifestation of acute rheumatism, tonsillitis may be the actual primary lesion.

(4,) Many cases are now definitely on record in which endocarditis has followed a non-scarlatinal tonsillitis unaccompanied by joint pains. In numerous other cases the tonsillitis has immediately preceded an attack of arthritis or of chorea.

(5,) The presence of the same micro-organisms in the tonsils, joints, blood and urine is evidence in favour of the participation of pyogenic cocci in the etiology of rheumatism.

Peri-tonsillitis. — As a local application Baldwin[3] uses the following:—

℞ Spt. Turpentine | Oil of Wintergreen 5 drops
Spt. Lav. Comp. āā 10 oz.

This solution is applied with a brush all about the tonsils and pillars of the fauces every few hours.

REFERENCES.—[1] "Laryngoscope," Nov., 1898; [2] "Med. Press and Circ.," Feb., 1899; [3] "Merck's Archiv. of Mat. Med.," Feb., 1899.

TRACHEA (Diseases of). *W. Milligan, M.D.*

Syphilitic Ulceration of the Trachea.—Walker Downie records three cases of this somewhat rare affection. The cough which accompanies this lesion is frequent and irritating, and when accompanied by expectoration of blood may give rise to the suspicion of some pulmonary lesion. The severity of the respiratory difficulty and the noisy character of the breathing to some extent resembles the symptoms associated with laryngismus stridulus.

In none of the three cases described by the author was any pain complained of. In two of the cases the lesion was thought to be the result of congenital syphilis, in the third of acquired syphilis.

REFERENCE.—"Brit. Med. Jour.," Oct., 1899.

TRANSFUSION. *Priestley Leech, M.D., F.R.C.S.*

Schieking[1] has devised a new saline injection. He points out that the ideal saline injection fluid should not only contain calcium and other salts but should also contain a substance capable of taking up into chemical combination the carbon dioxide present in excess in

the blood and lymph bathing the tissues. Normally this is accomplished by the presence of an alkaline globulin, which in the presence of carbon dioxide forms an alkaline carbonate and a free globulin. He has found that sodium saccharate in presence of carbon dioxide undergoes decomposition into sodium carbonate and sugar. The free dioxide is thus at once taken up into stable combination and its toxic power thereby neutralised. Clinical use of this drug bore out the expectations formed from its use on frogs and warm-blooded animals. The solution for use contained 0·03 per cent. of sodium saccharate and 0·7 per cent. of sodium chloride. Care must be taken that the mixture contained neither free sodium hydrate nor sugar; in other words the sodium saccharate must be pure.

REFERENCE.—[1] "Therap. Monat.," Dec., 1899.

TUBERCULIDES. *T. Colcott Fox, M.B.*

Under this term a number of eruptions are comprised which frequently occur in association with tuberculosis, and have attracted increasing attention in late years. They are to be distinguished from the known and classed examples of tuberculosis of the skin, which satisfy the required tests, such as the so-called true tuberculous ulcer, the manifold phases of lupus vulgaris, scrofuloderma, and the tuberculous gummata of children.

James C. Johnston,[1] of New York, applies the term *paratuberculoses* moulded on Fournier's class of *parasyphilitic* affections. Johnston includes erysipelas perstans, perhaps lupus erythematosus and a hyperpigmentation common also to other cachexias. The clinical forms of tuberculides are numerous, and have already received a multitude of names. The picture varies with the localisation (regional or more or less generalised), the bulk and number of the lesions, the mode of evolution, and the occurrence of secondary changes with pustulation or necrosis. The eruptions range from the well-known lichen scrofulosorum, characterised by aggregations of micro-papules, through more or less generalised acneiform eruptions, and localised "necrotising chilblains," to nodular or gumma-like masses, culminating in those seen in erythema induratum. They are generally indolent, disappear spontaneously without spreading by local infection, and may recur for years.

Observers are at present at work seeking to discover whether these eruptions simply develop and flourish on a tuberculous or other impoverished soil, or whether they are really tuberculous and conform to the tests, clinical, histological and experimental. If tuberculous, whether they are due to the presence of the bacilli in the lesions, and

discharged from some focus, or whether toxins of the bacilli entering the blood current sufficiently account for the eruptions. The question of "*The Tuberculides*" was selected for discussion at the recent Fourth International Congress of Dermatology and Syphilis.

Prof. C. Bœck (Christiania) pointed out that these eruptions frequently failed to conform to the recognised tests of tuberculosis (histological, bacteriological, and experimental), although the clinical evidence of some close relationship was strong. The precise limit between the recognised forms of cutaneous tuberculosis and the tuberculides was however not to be found so much in these tests as in the onset of the entire eruption and its distribution, and more particularly the more or less perfect symmetry.

He divided these eruptions into: (1,) Forms generally perifollicular and superficial, such as lichen scrofulosorum (bacillus found), the papulo-squamous tuberculide, and the perifollicular, pustular tuberculide; (2,) Forms generally not perifollicular, which are, as a rule, more deeply seated, such as lupus erythematosus, lupus pernio, the papulo-necrotic tuberculide, the nodular tuberculide.

Dr. Colcott Fox (London) set forth the characters of the miliary lichen scrofulosorum, the nodular erythema induratum, and the forms intermediate in character to which the name tuberculide had been first given. He pointed out that clinical, histological, bacteriological and experimental evidence was accumulating to prove their tuberculous character. There was, however, evidence that the virus must be disseminated by the blood current, and that it was often very attenuated. The latter would account for the incomplete architecture, failure to find bacilli and to successfully inoculate from many cases. There was no spread by local infection as in lupus. On the whole he thought the eruption due to bacillary infection under special conditions.

Professor Campana (Rome) thought it difficult to distinguish a tuberculide caused by toxins from one caused by the bacillus itself. Further, he was of opinion that the chronic poisoning of tuberculosis predisposed to certain indolent local eruptions of external origin which simulated true tuberculoses.

Dr. Darier (Paris) would include with lichen scrofulosorum, erythema induratum, the acneiform, papular and nodular "tuberculides" proper, and certain varieties of eruptive nodular lupus, lupus erythematosus and lupus pernio. He thought that the hypothesis, that these eruptions were due to the multiple embolism of bacilli of very low virulence, which rapidly succumbed in the fight with the tissues, explained in a satisfactory manner all the known facts.

Lichen Scrofulosorum.—Gilchrist,[2] described the first case recorded in a negro. No tubercle bacilli were found, but the tuberculous architecture was very well marked.

Erythema Induratum (Bazin).—This affection, which has attracted considerable attention in recent years, is characterised by the evolution of indolent inflammatory gumma-like nodules in the deepest layers of the skin, and almost invariably localised bilaterally on the legs, especially behind below the bellies of the gastrocnemii. Some nodules involute leaving atrophy, some may suppurate slightly and discharge through a small opening, and others again may leave ulcers. These nodules are distinguished from erythema nodosum by the site, and the indolence and chronicity; and from syphilitic gummata by the bilateral distribution, extreme indolence, and continuous evolution over years. Often, however, the diagnosis on first seeing the patient is difficult. The occasional association of the nodules with tuberculous lesions of the glands, etc., has suggested to some observers a tuberculous origin. Thiebierge and Ravant[3] have demonstrated by microscopical examination the tuberculous architecture of these nodules. They failed to find tubercle bacilli, but in one case they obtained positive results by inoculation experiments. Colcott Fox[4] has confirmed these results by histological examination and inoculation in one case.

REFERENCES.—[1] "Phil. Monthly Med. Jour.," Feb., 1899; [2] "Johns Hopkins Bull.," 1899. p. 84; [3] "Ann. de Derm. et de Syph.," vol. x, No. 6, June, 1899, p. 513; [4] Discussion on "Tuberculides," Internat. Cong. of Derm. and Syph., Paris, 1900.

TUBERCULOSIS. *Prof. Charles Ruata, M.D., Perugia.*

My aim is to give an answer to the following questions: *When a physician discovers a tubercular infiltration existing in a lung how long is it since the disease began?—How does the specific bacillus reach and spread in the lungs?—What is the influence of the specific bacillus on the length of the disease and on death from Phthisis?—The question of Heredity?—The question of Treatment?*

(1,) *When did the disease commence?*

To answer this question is of the greatest importance. Medical opinion generally seems to be that pulmonary tuberculosis begins from the first discovery of the disease, but I suggest that the true commencement may be much earlier.

Let us examine the following case: A student of medicine consulted me in May, 1899, for a very severe hæmoptysis that he had a few days before. His history was briefly the following: His family (father, mother, three sisters and three brothers) had always been

very healthy, all of them stout persons, strong and well-built. In 1891, one of his three sisters who were in a college at Siena, presented symptoms of pulmonary tuberculosis. It was shown that she was a great friend of another young lady of the same college, who died from consumption one year before. Soon afterwards symptoms appeared in the other two sisters, and one year afterwards the mother too was attacked by the same disease. Two sisters died, one in 1893, and the other one year after; the mother died in 1869, and the third sister in 1898, all from phthisis. My patient in 1898 had a very serious hæmoptysis while at the University, after which he left Siena and came to the University of Perugia. After the hæmorrhage a most careful examination by his medical man failed to reveal any diseased point in the lungs that could account for the hæmoptysis.

A year later, in May, he had a second hæmoptysis, not quite so severe as the first. I examined him fifteen days after, but could find nothing except an increase of the vocal resonance on the left clavicle. Notwithstanding, I had no doubt upon the diagnosis of pulmonary tuberculosis, and in the following October, when he came back to Perugia to resume his studies, all the symptoms of the disease were present on the apex of the left lung, with considerable bacilli in the sputum.

In this case it is certain that the first hæmoptysis in 1898 proceeded from tubercles in the left lung, but the diseased spot was too circumscribed for discovery. Had not the disease attacked a rather large vessel and produced the hæmoptysis, no one would have suspected tuberculosis. And as the health was quite perfect as regards appetite, general appearance, feeling, etc., evidently my student would never have thought of consulting a medical man until October, 1899, when cough, loss of flesh, etc., began, although the disease had been contracted two years at least.

It seems evident that in this case the tuberculosis began during the illness of his sisters and mother, but its symptoms were not apparent until the month of May, 1898, and again the same month, 1899, and at last in October of the same year.

When we first discover the symptoms of pulmonary tuberculosis, careful inquiry commonly reveals a clear history of prolonged contact with a phthisical person two, three, four, or even more years. My case book shows such a record in 90 per cent. of all cases. Sometimes one finds a history of pleurisy three, four, and even more years previously, and so on. In all these cases we might infer that the disease began at the time of contact, and that since then it spread very slowly in the lung, until it attained such an extension as to give

the known signs of pulmonary tuberculosis. Practically, a person with tuberculosis may have no possibility of knowing that he is affected by such a disease.

(2,) *How does the specific bacillus reach, and spread in, the lung?* —It is generally admitted that the specific bacillus enters the lungs solely by the respiratory passages. But as it is abundantly proved that many persons, medical men, nurses, hospital servants, etc., abundantly inspire the bacillus of tuberculosis without becoming consumptive, we must ask how the immunity is accounted for.

We must not overlook the fact that in about 90 per cent. of all cases tuberculosis begins at the apex of one lung. The cause of this seems to be the weak respiration of this part of the lung. It lies under the clavicle, which is a rigid bone, and, unlike the ribs, does not follow the movements of respiration; so that in ordinary respiration the apex does not expand itself, and the epithelial cells of its lesser bronchi are in contact with each other, so that their action is stopped. This is the most favourable condition for allowing the bacillus to effect a lodgment and form a tubercle.

And as we see the normal lung by far more subject to tuberculosis in that part of it where the respiration is weak, we observe too that every cause of weakness or of bad respiration is a predisposing cause to tuberculosis.

This is evident in the influence of corsets as a cause of pulmonary consumption. In Italy, except in the higher part of it (Piedmont, Lombardy and Venice), stays are of general use by women and very young girls, in town and country. This has a direct relation to the constant higher death rate from pulmonary tuberculosis in women that we have solely at the age during which the influence of stays is felt, namely from 5 to 48 or 50 years of age. Before or after this period pulmonary consumption is the same in both sexes, or even higher in men. I quote here the official statistics of 1898; other years give the same results.

DEATHS FROM PULMONARY TUBERCULOSIS IN ITALY DURING 1898.

Age.	0—4	5—14	15—24	25—34	35—44	45—49	50 & upds.
Men	1051	858	4542	4045	2768	1119	3066
Women	1010	1653	5081	5246	3186	1065	2444

In England, where corsets, I am told, is not so widely spread, we have different figures, which at first sight seem contradictory.

DEATHS FROM PULMONARY TUBERCULOSIS IN ENGLAND DURING 1898.

Age.	0—4	5—14	15—24	25—34	35—44	45—54	55 & upds.
Men	802	585	3859	5241	5320	4115	3115
Women	689	1051	4226	4554	3827	2239	1712

In England the difference in mortality between men and women begins at the same period, but lasts only until about the age of 20. The difference between the English and the Italian figures admits of easy explanation. In England two other large causes of consumption exist, acting particularly on men from the age of 20, and far less on women, viz.: the influence of life in manufactories and of alcoholic stimulants. Unhappily, in Italy we have few manufactories, but in those regions where they exist the death-rate from consumption is far higher.

Alcoholism in central and lower Italy is almost unknown, while it is tolerably widely spread in Piedmont, Lombardy and Venice. In Milan, the most industrial town in Italy, possessing a large number of manufactories, alcoholism is widely spread and the mortality from tuberculosis resembles that of England.

DEATHS FROM PULMONARY TUBERCULOSIS IN MILAN DURING 1898.

Age.	0—4	5—14	15—19	20—30	40—59	60 & upwards.
Men	8	14	42	246	141	26
Women	12	52	80	246	59	15

I am sorry that I cannot detail the mortality from 20 to 40 years as the official statistics of Milan do not admit of it.

The general rule that every cause interfering with free respiration is a predisposing cause of pulmonary tuberculosis, holds good for the influence of stays in controlling the movements of respiration. Let us consider the following further facts.

In Italy, while the death-rate from tuberculosis in the 206 largest towns has been 25 for every 100,000 inhabitants, in all the other towns and villages, which have a population of less than 15,000 inhabitants, the same death-rate has only been 16·5. Before the abolition of slavery in America consumption was unknown amongst the negroes, who lived constantly in the open country, and could not enter any town; after abolition they entered and took up

their abode in the towns of the United States, and now we know that they are more subject than white men to phthisis.

Again : in England as a result of the great improvement in sanitation, particularly during the second half of the century just past. all of which tended to the betterment of the respiration of the population at large, the death-rate from consumption was reduced from 26·8 every 100,000 inhabitants, as it had been during the ten years, 1851–1860, to 14·6 as it was during the five years, 1891–1895.

All these facts prove in the most satisfactory manner that the great predisposing cause of pulmonary consumption is bad respiration in the widest sense of the term.

When the respiratory movements are interfered with, or when we inhale an impure air, as happens in large towns, where overcrowding is usually general, the action of the ciliated bronchial epithelium is interfered with, as we may observe, especially at the apex of the lungs. Impure air has the effect of introducing on the mucous bronchial membrane a quantity of irritating substances which produce local congestion. and interfere with the action of the ciliated cells. Both these conditions are extremely favourable to the bacillus of tuberculosis. People who breathe fresh open air do not become tuberculous, although they sometimes inhale the specific bacillus, as happens to everyone in the present condition of society.

When the bacillus finds the proper conditions in the lung tissues for development it produces the well-known tubercle. If it enters the lymphatic vessels it is brought to the bronchial lymphatic glands, which enlarge, and form a great barrier to its further progress. One tubercle produces another, and at last we have a local. though very limited infiltration of several tubercles. During this stage of the disease it is impossible for the patient to suspect its existence, unless when some vessels are attacked, and a more or less considerable hæmorrhage ensues.

Afterwards the bacilli are brought into the bronchi, and driven to other spots by the act of respiration. If they find there a suitable condition, they give rise to new tubercles. Fluegge has proved that when a phthisical person coughs or sneezes, or speaks aloud, he emits a quantity of bacilli. Then it is certain that in the bronchi of tuberculous persons many bacilli are present, which are driven to other points of the lungs by the act of inspiration. This is perhaps the principal way by which the bacilli of tuberculosis spread in the lungs. Lymphatics may help their diffusion, but in far less degree. When tuberculosis begins in one lung, after some time we always see it diffused to the other. This extension could not be explained

as occurring by way of the lymphatic vessels: it is the result of inspiration. In cutaneous tuberculosis, where the bacilli can only spread by a process of continuity and by the lymphatic vessels, the progress of the disease is exceedingly slow; the same thing would happen in the lungs were it not for the aid of inspiration which brings bacilli into several parts of both lungs, producing a dissemination of the disease.

Of course, if the patient at the beginning of the disease is careful to breathe well and always fresh air, the bacilli will not find proper ground for their development, as was said before when speaking of their introduction from outside, and the progress of the disease will be retarded.

(3,) *What is the influence of the specific bacillus on the duration of the disease and on death from Phthisis?*—Wherever a pure tubercular disease produced only by the bacilli of tuberculosis exists, we see that its progress is very slow. In lupus, in glandular tuberculous enlargement, in caries of the bones, etc., where the bacillus works by itself progress is far more chronic than in tuberculosis of the lungs. This difference may be easily accounted for when we think of the conditions surrounding tubercles in the lungs. When the tubercles degenerate and open, being in direct communication with the external atmosphere, the common pyogenous bacilli of the air are constantly poured upon them in the proportion of about 28,000 times every twenty-four hours. The little bacillary sores are not protected from these secondary infections, as we can protect external sores by Listerian dressing, and there occurs what happened in our hospitals before the introduction of antiseptic dressing. The symptoms that we observe are strikingly the same: chill, sometimes shiverings, pulse from 100 to 130, more or less high temperature, profuse sweating, great emaciation. And the product of this secondary infection is rapid destruction, of lung tissue, with abundant formation of pus, and lung detritus, abundant expectoration, formation of cavities of every description, and death from the effects of absorption of these poisonous products.

It is marvellous to see how small a quantity of lung is sufficient for maintaining life in fair health, and certainly death from tuberculosis never happens for want of breathing tissue, but always from the effects of the poisonous products of the secondary infection of pure bacillary tubercle. The specific bacillus is the only cause of tubercle, but the pure tubercle, *per se*, would perhaps never kill, or certainly would last many years; the cause of death is the secondary infection.

(4,) *The question of Heredity.*—I do not intend to repeat all that has been written against and in favour of the heredity of tuberculosis; I

only wish to consider the question from a new point of view which I consider of the utmost importance.

First, it is well to remember the following facts: The bacillus of tuberculosis very often circulates in the blood, so much so that it has been found in the milk of tuberculous cows and of tuberculous women, without any lesion of the udder or breast. Tubercular meningitis, the solitary tubercle of the brain, tuberculosis of the joints, of the bones, etc., can only be explained by admitting that the specific bacillus may circulate in the blood. The placental capillary vessels are larger than the bacillus of tuberculosis, and several cases have been examined of infants born alive from tuberculous mothers, who were found tuberculous a few days after their birth, when they died. Clinical observations prove the same thing. Practitioners frequently observe a child die of some form of tuberculosis a few days after its birth from a tuberculous mother.

Now let us observe the following statistics :—

DEATHS IN ENGLAND FROM TABES MESENTERICA, TUBERCULAR MENINGITIS AND PHTHISIS, UNDER 5 YEARS OF AGE IN 1898.

	0—3 months.	3—5 months.	6—12 months.	Total under 1 year.	1	2	3	4
Tabes Mesenterica	624	1221	1420	3265	1135	394	160	96
Tubercular Meningitis	274	532	1179	1985	1397	693	485	344
Phthisis	56	129	308	513	468	220	175	135

Medical men who deny heredity to tuberculosis cite the great number of deaths from tabes mesenterica in striking contrast with the relatively small number from phthisis in proof of their opinion. The great number of deaths from tabes mesenterica, they say, is evidently due to the influence of milk from tuberculous cows, while the lungs, upon which tuberculous milk has no influence, are much less subject to tuberculosis, and the few deaths are accounted for by external contact.

My much regretted friend, Sir Richard Thorn Thorn, in his admirable Lectures on "The administrative control of tuberculosis," explained in such a manner the large number of deaths from tabes mesenterica. But we can immediately see a strong objection to this explanation, in the high number of deaths from tubercular meningitis, which is no more under the influence of tuberculous milk than

is phthisis. Besides this, we must not overlook the striking behaviour of all these three forms of tuberculosis, which is alike from birth till the fifth year of life. We see, in all, that the number of deaths has a tendency to increase during the first twelve months, when it steadily declines until the fifth year of age. If the infected milk were the main cause of the large number of deaths from tabes mesenterica, seeing that in the other two forms of tuberculosis this cause cannot act with the same strength, we should have a different behaviour in the first twelve months of life.

The only difference existing between these three forms of tuberculosis is that of the number of deaths: all three present the same "clinical" behaviour, so to speak. Now if we admit their heredity, the difference in their number becomes quite evident and natural. We see at once that their number is almost mathematically proportional to the entity of the attacked organs. In the fœtus, the lungs are not yet distended, are small, and do not present the same facility for attack by the tubercular bacillus as the meninges, which have a larger surface, and are very vascular; the same observation must be made for the intestinal surface, which is immensely larger than that of the meninges, and must necessarily give us the larger number of deaths.

Again: how could we explain the 2000 deaths caused from tubercular meningitis during the first twelve months of life? The specific bacillus, we all agree, enters our organism, principally by respiration: so that if these infants were infected outside the maternal body, they should have presented a far larger number of pulmonary infections than meningeal infections. This point becomes more evident when we take into consideration the progress of all these three forms of tuberculosis in the other periods of life, as shown in the following figures:—

DEATHS IN ENGLAND FROM TABES MESENTERICA, TUBERCULOUS MENINGITIS AND PHTHISIS IN 1898.

	Total under 5	5	10	15	20	25	35	45	55	65	75	85 and upwards
Tabes Mesenterica ..	5060	219	186	170	125	100	136	90	56	21	4	—
Tubercular Meningitis ..	4904	887	356	192	112	122	69	30	6	2	1	—
Phthisis	1491	635	1001	3310	4775	9795	9147	6354	3439	1197	177	14

These figures show that the similarity in behaviour of the three

forms of tuberculosis continues until the age of 10 years, with similar declination of deaths in all three ; but at this point, while the two first continue to decline in the same manner, the third does the opposite ; its deaths increase enormously, and continue very high until the end of life. 1197 deaths from 65 to 74 years of age is always a very high number, as at such an age the number of people to be attacked is very small.

These facts to me admit of but one explanation : All, or almost all the deaths from tuberculosis during the first years of life are inherited. The influence of heredity makes itself felt principally until the age of about ten years. After this time the two greatest forms of hereditary tuberculosis (tabes mesenterica and meningitis) are very rare, while phthisis, being mainly produced by inhalation of the specific bacillus, assumes an extraordinary importance when the effects of acquired pulmonary tuberculosis in previous years begin to show themselves.

The Italian official statistics, and all the others that I have consulted, give the same results as the English.

(5,) *What about Treatment?*—Rational treatment of pulmonary tuberculosis can only depend on the knowledge that we have of the disease. And what we know is this : That pulmonary tuberculosis is caused by a resistant bacillus, which produces a neoformation, in which it lives. This little tumour, or tubercle, is entirely without vessels. The tuberculous sore is afterwards infected by the common pyogenous micro-organisms of the air, giving rise to toxic products, which are absorbed, and cause all the most alarming symptoms of the disease, and finally death.

From this we may learn that remedies given by the mouth are useless, and for two thousand years have not saved one single consumptive person from death. To be effective they must be diluted beforehand in our fourteen pints of blood, and till now we have no medicine whatever which could be prescribed in such a concentrated form as to destroy the specific bacillus without first killing the less resistant cells of which our body is formed. All medicines introduced into the blood might prove of a certain utility against some effects of the disease, and so counteract the effects of toxic products in the blood, etc., but they are certainly useless as specific treatment.

Until now no serum has been found showing the least power, and there is no hope of discovering one, as a specific serum could only act on the specific bacilli, while we know that our most dreaded enemy must be the secondary infection.

One of the greatest aims of the practitioner should be to prevent secondary infections. For such a purpose the patient must live in a

pure atmosphere, as free as possible from micro-organisms. The splendid effects obtained since ancient times by long sea voyages can only be explained by the effects of pure air, preventing secondary infections. The good effects of our sanatoria are produced in the same manner. If a patient could constantly live in the pure air of mountains or of the ocean, certainly he would be in the best conditions for permanent cure. But generally, when patients come back from sanatoria to our foul towns where so many impurities and micro-organisms enter their lungs, they relapse and die.

The most efficacious and rational treatment of our time is the constant inhalations of antiseptic volatile substances. I have since 1883 obtained a large number of permanent cures by their use. Patients cured in 1884, 1885, 1886, and so on, are now living in perfect health. My patients wear a very light inhaler day and night, at home and out of doors, for a long time, never less than ten or twelve months, sometimes for several years. Every hour or every two hours they put in it from 30 to 50 drops of a volatile antiseptic medicine, except at night, during which they put it in when they awake. A patient of mine living in good health kept this inhaler for seven years, from 1891 to 1897. The compounds of **Creasote,** mixed with **Volatile Oils** and **Chloroform,** or **Formalin,** conveniently diluted with alcohol and a little chloroform to make it bearable, give excellent results.

The first effect of such a treatment is to stop secondary infection when the anatomic changes are not yet too far advanced. The evening fever disappears, and with it night sweats, general depression, etc.: the appetite returns, the patient gains in weight, and resumes the aspect of a healthy person. The cough and expectoration diminish, sometimes very rapidly, sometimes but slowly, till at last they entirely disappear. A little morning cough with some expectoration persists even when all the other symptoms have disappeared. The physical signs agree with the external manifestations described. The student, whose case is mentioned at the beginning of this paper, was shown by me at the Naples Congress on tuberculosis last year, when it was impossible to discover by physical signs that six months before he had a tolerably large infiltration at the apex of the left lung. The general aspect was that of a perfectly healthy man, and none could discover the least symptom of disease in him.

This stage is the most dangerous for the patient, because, thinking himself cured, he stops the inhalations, and the result is a relapse which will prove more obstinate than the first attack. This is the greatest drawback to this kind of treatment.

Of course, with the all-day and night inhalation treatment, great

attention must be paid to the general health and surroundings The patient must live out of doors as long as possible, sleep in a well-ventilated room with perfect sanitary arrangements and the bedroom windows open all night. The diet must be very nourishing and varied, but perhaps the over-feeding in some patients is objectionable.

As it is certain that in families containing a tuberculous member all the others are in great danger of taking the disease, and since they may have some very small, affected spot without any possibility of knowing it for one, two, or more years, I always direct that the whole family should live in the same conditions of fresh air, with windows open at night, etc., and sometimes I order the inhaler to be worn during the night for eight or ten days.

TUBERCULOSIS OF THE BLADDER. (See "Bladder.")

TUBERCULOSIS OF THE PROSTATE. (See "Prostate.")

TUBERCULOSIS OF THE SKIN. *T. Colcott Fox, M.B.*

Lupus Vulgaris.—Under the sections dealing with *Phototherapy* and *Electrotherapy* (see "Skin Affections,") will be found remarks setting forth the results achieved by these methods in the treatment of lupus vulgaris. In a discussion in Paris at the Fourth International Congress of Dermatology *apropos* of the Finsen treatment, the expense of the installation and prolonged treatment were insisted on, and the satisfactory results obtained by older methods were pointed out. **Extirpation** *of small areas, Lang's method*, where considerable alteration of the surface is not an objection, **Galvanic Ignipuncture** and **Scarification** were mentioned by Brocq. Audry thought grafting better than autoplasty. Besnier regarded ignipuncture as the method of choice for recurrent nodules.

To the same Congress Prof. Lang, of Vienna, brought ten patients illustrating his treatment by *Extirpation.* This treatment about which he is enthusiastic, is indicated whenever it is possible to radically remove all the diseased tissues. Reparation of lost tissue in extensive cases had been made by grafts or by plastic operations on the face, the eyelids, the nose and ears. The results were certainly very gratifying, but could not compare with those obtained by Finsen's treatment. Yet it must be remembered that Lang's treatment only took some days or weeks.

Nélaton held that **Total Excision** was the ideal method whenever it could be carried out. The loss of substance is rectified by grafts or autoplasty. The latter by gliding, in his experience, gave the best results. The grafting of Olier or Thiersch gives less satisfactory

results. Nothing can be better for early nodules than excision, with simple suture of the wound.

Bertarelli said he had treated thirteen cases of lupus by **Calomel Injections** (method of Scarenzio) without success. It is sometimes impossible to distinguish between tertiary syphilides and lupus, and these injections were then of value.

Dubreuith read a paper on *Primary Lupus of the Nasal Fossæ* extending to the face. This is of frequent occurence. The lupus reaches the face by the nostrils or by the lachrymal ducts, and the related glands of the neck may become infected. He also insisted that the primary tuberculosis of the mucous membrane might assume the form, not of declared lupus, but of a special chronic coryza which leads to atrophy and crusting.

Cabral in a "Thesè de Montpellier," 1899, collects most of the published cases in which lupus has been treated by **Calomel Injections**, and adds three new observations. He concludes that the calomel has a profound action due to transformation of this salt into sublimate in the tissues attacked. The treatment is indicated in all the deep seated lupus processes with ulceration and marked infiltration, and when amelioration has taken place the cure can be completed by the destruction of rebellious nodules by the galvanocautery, scarification, etc.

In *lupus vulgaris* Ehrmann has employed for some years ointments of **Resorcin** (30 to 33 per cent.). Their action is not caustic, but after two or three days a **Boric Acid Ointment** is called for to subdue the irritation. In this manner excellent results can be obtained.

A. Philippson[1] has obtained favourable results by administering pills of **Fluoride of Sodium** (1 dcgm. thrice daily after food in a little milk). It is too irritating to the stomach, however. He recommends instead the **Para-Fluor-Benzoate of Sodium** (50 ctgms. t.d.s.).

L. Waelsch,[2] after describing the local reaction and the results of histological examination of the effects produced by injections of **Tuberculin R**, states that he has never observed the complete cure of a lupus by this method.

Veiel[3] destroys the diseased tissues by a pomade of **Pyrogallol** (10 per cent.) applied for four or five days, and he allows the wound to heal under a weaker pomade (0·50 to 2 per cent.) which destroys lupus tissue but not the healthy granulations. The urine should be watched.

Tuberculosis verrucosa of Riehl and Paltauf.—Fabry[4] has observed no less than sixty cases in eight years, and of these, fifteen were coal

diggers. He regards this phase as distinct from lupus papillosus and post-mortem warts. The primary lesion appears, not as a lupus nodule, but as a permanent, small, brown-red scaly congestive patch. Such an early patch may contain typical giant cells in all layers of the dermis.

Moschini[5] observes that warty tuberculosis comprises several clinical types regarded from the morphological point of view. The papillomatous ulcerating forms, however, should not be included. Warty tuberculosis results from a chronic infection with tubercle bacilli, often difficult to find, acting on a skin predisposed to produce new fibrous tissue. The latter may bring about warty productions or fibromatous thickenings.

Acute disseminated Miliary Tuberculosis of the Skin.—Pelagatti[6] relates an additional case of the sudden outburst of a disseminated eruption of tuberculous nodules, about a hemp seed in size, following measles in a baby. These nodules can die away, or extend, or ulcerate and leave scars. They present the structure of tuberculosis and disclose tubercle bacilli.

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TUBERCULOSIS (Renal). (See "Kidney.")

TUBERCULOSIS (Surgical). *Priestley Leech, M.D., F.R.C.S.*

Watson Cheyne,' in his Harveian lectures, treats on this subject, but confines his attention to tuberculous gland disease, tuberculous peritonitis and genito-urinary tuberculosis. He first discusses the question as to the etiology of tuberculous diseases, their local character, the mode of production, and the primary or secondary nature of tuberculous deposits, this latter being an important point in surgical treatment. In many cases the disease is primary, although in the case of deeper seated tuberculosis this is not always clear.

His conclusions in this matter are: Tuberculous disease is in the first place a local affection, even if situated at a considerable distance from the possible point of entrance of the bacilli. It is highly probable that tubercle bacilli may live in the blood for some time, and unless they meet with circumstances under which they can grow, may remain quiescent or die out. From the primary deposit tubercle bacilli may be disseminated, either in large quantities along with cheesy particles giving rise to acute general tuberculosis or to acute tuberculosis of an individual organ, or in small numbers which may or may not settle in other parts. Apparently secondary deposits may, however, not arise

from the primary one but may be new lesions arising from the original source from which the primary one arose.

The severity of the lesion depends on the number of bacilli which gain entrance, their virulence and the power of the tissues to resist the attacks of the tubercle bacilli, and on this latter depends the effect of treatment, especially in those forms where nothing is done specifically against the bacilli themselves.

Tuberculosis of the Lymphatic Glands.—The cervical lymphatic glands are the most frequent seat of tuberculous disease accessible to surgical interference; in order of frequency, the glands affected are those in the anterior triangle, particularly the upper part, then those in the posterior triangle, and then the submaxillary group. In all these cases of enlarged glands it is common to get a history of an acute inflammatory enlargement in connection with some acute process at the origin of the lymphatic vessels, *e.g.*, boils, carious teeth, quinsy, etc., at the commencement of the trouble, and as this passed off the glands began to subside, but instead of disappearing as they would do in a healthy subject, they subsequently enlarged and assumed the characters of tuberculous glands. Cheyne thinks that in these cases the bacilli do not gain entrance at the original point of the inflammatory affection of the teeth, tonsils, etc., but that there is at first a non-specific inflammation of the glands, and a subsequent infection of these inflamed glands with tubercle bacilli from the blood stream.

Clinically they may be divided into five groups:—

(1,) The glands are small and hard, with no marked tendency to deformity. Fresh glands tend to become involved, and if there is no intercurrent trouble, *e.g.*, measles, chicken-pox, influenza, etc., they tend to gradually disappear as the patient grows older. If intercurrent troubles occur suppuration may take place in one or more glands, or the whole trouble may take on a more acute course.

(2,) The glands enlarge steadily, or by fits and starts, attain a large size, become very numerous, so that by and by the whole side of the neck becomes a mass of enlarged glands, and great deformity is produced. This condition is often bilateral: it may go on for a long time without suppuration, the glands remaining discrete. The glandular disease tends to spread to the axilla. The patient frequently has a pasty complexion, feels weak, and the general health is not good. On removal some are cheesy; some show a few caseous or calcareous nodules; others appear fleshy without any sign of degeneration, but tubercles are found on microscopical examination.

(3,) The glandular trouble is more acute. At first the disease may be limited to a few glands which, however, enlarge pretty rapidly. Periadenitis occurs, the glands tending to become matted together, and adherent to the tissues around, while fresh glands enlarge. The glands break down, and if left to themselves, abscess after abscess may form till numerous ulcers are present, often extending round the neck in the submaxillary regions, and downwards along the triangles.

(4,) Tuberculous glands with unopened abscesses. One or two glands only may suppurate and break down; or the abscess may be beneath the deep fascia, or it may have burst through, forming a subcutaneous abscess.

(5,) Cases where the abscesses have burst or been opened, and where sinuses remain; the skin at the orifice of the sinus becomes the seat of a tuberculous ulcer. Medicinally, little can be done. Place the patient under the best hygienic conditions, fresh air, cod-liver oil, sunshine, and a nourishing diet. Arsenic sometimes seems to do good and lead to the disappearance of the sinuses. Remove all sources of irritation (carious teeth, etc.); if the glands are enlarging it is well to fix the head. Local applications are of little use; and injection of antiseptic materials, Cheyne thinks, does no good. Do not send the patient away for too long a time if there is any doubt about the glands breaking down.

In group one the cases may be watched, and unless the disease becomes active there is no need for surgical interference.

In group two the cases generally require operation, and it is better not to delay too long. There is more danger of the disease spreading to the thorax or axilla. Excision must be done; scraping is no good, and an extensive operation is in most cases required.

In group three the cases sometimes subside, but they must be closely watched, and if they do not subside they must be removed preferably by excision.

In group four, suppurating glands may be divided into three groups: (*a*,) The abscess has burst through the fascia, but forms only a comparatively limited swelling under the skin. In these cases he advises complete excision of glands, abscess, etc.; also it is usually necessary to remove the jugular vein. Care should be taken to avoid puncturing the abscess as far as possible; (*b*,) The abscess in the gland has burst through the fascia, forming a large swelling under the skin, with marked thinning of the skin over it. The removal of the thin skin would leave too large a gap; it is better to open the abscess, and later on, when only a sinus is left, to excise, or the abscess may be scraped, and if a cure does not ensue, excise; (*c*,) An abscess is

present which has not burst through the fascia. One may wait until the whole gland has broken down, open, scrape, and inject iodoform and glycerin, and stitch up again. A very small incision behind the sterno-mastoid often suffices in these cases with a very small scar. Otherwise excision must be performed.

Group five.—Enlarged glands with sinuses. Excision is the best treatment unless the sinuses are too numerous. In the latter case thorough scraping, with the subsequent application of undiluted carbolic acid is the best treatment.

Cheyne says he cannot emphasise this point too strongly—that in operations on tuberculous glands one must not be content with shelling out the infected glands but must remove the whole of the glandular area, whether the glands are visibly affected or not. In the anterior triangle, the most common situation where one has to operate for tuberculous glands, the whole of the fat and fascia must be removed, leaving the vessels, nerves, and other structures thoroughly clean, and removing all the tissue underneath the sterno-mastoid up to the mastoid process. The incision may be a longer or shorter one along the anterior margin of the sterno-mastoid, or a horse-shoe shaped one with the concavity backwards recommended by Beatson of Glasgow. The steps in the operation may be summarised as follows: expose the edge of the sterno-mastoid along the whole length of the incision, and define the deep fascia and separate the tissues over the whole of the anterior triangle; at the lowest part of the wound make an incision through the deep fascia close to the edge of the sterno-mastoid muscle, and define the jugular vein; this is the key of the operation; the glands always lie close to the jugular vein, and are often adherent to the sheath of the vessel, and by beginning at the lower part below the enlargement of the glands and exposing the vein and stripping up the common sheath one can avoid any subsequent injury to the vein. If the glands cannot easily be peeled off the vein, tie the vein by two ligatures at its lower part, dividing it between the ligatures. Then pick up the lower end of the upper portion of the vein, insinuate the finger behind it, and separate the vein along with the glands from the artery and vagus nerve behind it. The vein is defined at its upper part, cleared, and a ligature placed around it. The next step is to ascertain the situation of the spinal accessory nerve. This is done by turning back the edge of the sterno-mastoid muscle, and peeling off the fascia from its deeper surface; the nerve is generally easily seen dividing the mass of glands into two parts; the nerve is followed up and cleared from the glands. The upper part of the glands is detached, and often they are pretty firmly adherent to the fascia

over the transverse process of the atlas, and the sterno-mastoid may have to be divided.

If sinuses are present, scrape them out, not too deeply, swab with pure carbolic acid, and include the sinus in an oval skin incision. In many cases the glands may be removed without opening the sinuses.

In the posterior triangle the essential point is to take care of the branch of the spinal accessory nerve running to the lower part of the trapezius. This is often difficult to do. First detach the fascia from the posterior part of the sterno-mastoid, find the point where the nerve comes out, and then follow it down through the glands.

Halsted and Le Count[2] report a case of mammary tuberculosis, and give a review of the literature of the disease. Mammary tuberculosis is seen in two forms: the disseminated nodular or discrete form, and the confluent. The most characteristic features of the disseminated form are the extreme chronicity of the process, and its painless and insidious development; the confluent form is marked by a more acute onset, greater pain and rapid enlargement of the breast, and is the more common. In about 75 per cent. of cases it is associated with tuberculous enlargement of the corresponding axillary glands. In many instances the mammary disease was regarded as secondary to the gland affection, but the authors say that the primary focus in the breast often escapes notice until after the axillary glands have become considerably involved. As in other forms of tuberculosis, softening and suppuration with the formation of fistulæ is the natural and frequent termination of both types of this disease.

Healing seldom occurs, and spontaneous healing before suppuration occurs seldom, if ever. The diagnosis of mammary tuberculosis is difficult; microscopic examination of the growth, and the presence of bacilli, must be the diagnostic signs. In the disseminated nodular and confluent form, early removal of the breast and axillary glands offers the best chance of cure. The prognosis in cases of primary disease of the gland is excellent when this is done. In secondary tuberculosis the prognosis of course depends upon the seat and extent of the primary lesion. In the discrete nodular form where the disease is limited to a single focus, the remaining portion of the gland being apparently normal, the removal of the nodule with the adjacent gland tissue will be sufficient, provided the patient can be kept under observation for some time after the operation.

References.—[1] "Lancet," Dec. 16, 23 & 30, 1899, and "Brit. Med. Jour.," of same dates; [2] "Ann. Surg.," Dec., 1898.

TUMOURS OF KIDNEY. (See "Kidney.")

TYPHOID FEVER. *Edwd. Wilberforce Goodall, M.D.*

Etiology.—The common teaching with respect to the infectivity of this disease has been that the infection is rarely communicated directly from the sick to the healthy, and that as long as the patient's stools are properly disinfected there is little, if any, risk of the spread of the disease. Of recent years, however, the opinion has been gaining ground, especially among Medical Officers of Health and of Fever Hospitals, that this doctrine is erroneous, and that, on the contrary, personal intercourse is an important factor. During the past year or two, evidence bearing upon the question has been brought forward by several observers; and it has been clearly shown that one case of typhoid fever may give rise to others by direct communication of the materies morbi from the patient to those about him. This mode of dissemination is most commonly met with amongst the poorer classes, for whom, therefore, hospital accommodation is most necessary. For details of evidence upon the subject we may refer our readers to a paper by Boobyer,[1] and the report of a discussion at the Epidemiological Society on April 20, 1900.[2]

Kübler and Neufeld[3] record an instance in which the bacillus typhosus was isolated from well-water, in use for drinking purposes. This water had been contaminated with the urine of a patient suffering from typhoid fever, and was the cause of a local outbreak of the disease. The organism isolated behaved like the typhoid bacillus with litmus, milk, and glucose bouillon, and also to the agglutination test and Pfeiffer's reaction.

Pathology.—In the Goulstonian Lectures on the Typhoid Bacillus and Typhoid Fever,[4] P. Horton Smith gives a most valuable *résumé* of our knowledge of the bacteriology of the disease, and discusses the pathology, diagnosis and treatment, in the light of this recently acquired knowledge. Typhoid fever can no longer be regarded as a local disease of the intestines only. It is rather a form of septicæmia, in which, from a primary local lesion, a secondary dissemination of the bacilli takes place. The bacilli can always be found in the mesenteric glands, spleen and liver, often in the bone-marrow and the bile, frequently in the urine, and occasionally in other organs and in the blood. The characteristic rose spots are due to the presence of the bacilli. It is easy, now, to explain those cases in which the local lesions are slight or absent, while the constitutional disturbance is severe. But though the bacillus typhosus plays an important part in the production of the disease, it is not the sole actor. Its virulence is enhanced by the presence in the system of the absorbed toxins of

some of the normal inhabitants of the intestine, the bacillus coli, and the bacillus proteus vulgaris. These facts afford a clue to the explanation of relapses. The typhoid bacilli that have invaded the system during the primary attack, provoke in the blood and tissues only a slight immunising power, in consequence of which some of the bacilli escape destruction. If now a fresh absorption of toxins takes place, the virulence of these bacilli is renewed, a second invasion of the system occurs, and we have a relapse. "It would seem, then, probable that auto-intoxication plays a very important part in the causation of relapses—a consideration, be it remarked, in favour of the antiseptic treatment of the disease, and one which also emphasises the wisdom of the common practice of withholding solid food for some considerable time after the normal temperature has been reached. If this be given too early, before the digestive juices have recovered their full powers, marked fermentative changes would be likely to occur in the undigested mass, and thus the conditions favouring a relapse would arise."

Foulerton and Campbell Thomson[5] have recently published an interesting paper on the causation of nervous symptoms in typhoid fever. They examined two cases of the disease presenting marked cerebral symptoms; in one of the cases, indeed, the cerebral symptoms were of such prominence as to lead, in the first instance, to a diagnosis of meningitis, probably tuberculous; but the urine giving a definite Ehrlich's reaction and a 1 in 50 dilution of the blood-serum producing a marked agglutination of B. typhosus, the diagnosis was altered to typhoid fever. In this case meningitis was found at the post mortem examination. Cultures made from the meninges of the brain and the fluid in the lateral ventricles showed colonies of B. typhosus and B. coli communis. In the other case, in which no gross central lesion was found, there were negative bacteriological results as far as the brain was concerned. Portions of the brain in these two cases, and also in a third, in which there were no cerebral symptoms, were hardened in formalin, cut with a freezing microtome, and stained with methylene blue. In the meningitis case only were very slight changes found in the ganglion cells of the cerebral cortex. The authors also made experiments on rabbits and guinea-pigs, injecting typhoid bacilli and typhoid toxins into these animals. No changes of any importance were produced in the brain and spinal cord.

Diagnosis.—With respect to Widal's reaction, Horton-Smith, in the lectures above quoted, after a careful consideration of the subject, comes to the following conclusion: "For all practical purposes a 1–20 *dilution with a short time-limit* (*one hour*) gives admirable

results. A positive reaction so obtained has a diagnostic value about equal to that of the eruption—that is to say, that in very rare cases both may be observed in cases which are not typhoid fever. If however, in any given case we require from the test absolute infallibility, then we must use in addition greater dilutions, such as 1-100 (or even higher), employing, of course, the same time-limit as before—namely, one hour. But to use such dilutions as a matter of routine would be an error, since we should thereby wilfully diminish the value of the test by excluding many cases of typhoid fever (nearly 20 per cent.) which never reach the 1 – 100 limit during any part of their course."

Osler,[6] of Baltimore, considers the question of diagnosis under four heads :—

(1,) Difficulties due to *variations in the intensity of the infection.* (*a*,) *The mild cases*—short and slight febrile attacks with few, sometimes no, definite symptoms. In these Widal's reaction is of utmost service ; (*b*.) *Acute typhoid septicæmia ;* in these the symptoms are severe but not localising. Death sometimes occurs so early that a diagnosis is not possible during life ; and even post mortem a thorough bacteriological investigation may be needful in consequence of the absence of characteristic lesions.

(2,) Difficulties due to *early and pronounced localisation of the infection.* The brain, lungs or kidneys may bear the brunt of the attack in the first instance, and so give rise to an erroneous diagnosis.

(3,) Difficulties due to *peculiarities in the symptoms* : *e.g.*, abrupt onset ; absence of intestinal symptoms ; a negative Widal's reaction ; absence of eruption. Chills are not uncommon in enteric fever ; and Osler states that they often lead to a diagnosis of malaria, in which disease, however, they are exceptional, except in cases from the tropics. An examination of the blood should be made.

(4,) *The difficulties of diagnosing Typhoid Fever from Malaria.* —A microscopic examination of the blood is all-important. Clinically, practitioners living north of Mason and Dixon's line should be guided by two rules : (1,) An intermittent fever which resists quinine is not of malarial origin ; (2,) In these localities a continued fever is not due to malarial infection.

Da Costa[7] relates some cases in which rashes simulating those of scarlet fever, measles, and typhus fever occurred. These rashes may give rise to diagnostic difficulties. But the symptoms peculiar to the diseases mentioned are wanting (sore throat, desquamation, coryza, coughing and sneezing, injection of the

conjunctivæ, etc.). Their occurrence does not add to the gravity of the prognosis.

TREATMENT.—Some important contributions to our knowledge of the prophylactic treatment of typhoid fever have been published during the past year. Wright and Leishman[8] inoculated two thousand eight hundred and thirty-five British soldiers (privates) at various stations in India. The "vaccine" employed in the earlier cases consisted of lysolised (1 per cent. lysol) four-week-old cultures of a virulent typhoid bacillus, which had been prepared about a year previously. They had been sterilised by an exposure to a temperature of 60°C. The quantity used for each inoculation varied from 0·5 to 0·75 c.cm. For the later cases, "vaccine" material of a very similar nature was used. Of the two thousand eight hundred and thirty-five inoculated men, twenty-seven subsequently contracted typhoid fever, and five died; while of eight thousand four hundred and sixty uninoculated men, two hundred and thirteen contracted the disease, and twenty-three died. That is to say, 0·95 per cent. of the uninoculated contracted the fever, and 0·2 died, as against 2·5 and 0·34 respectively of the uninoculated. These authors give a detailed account of the methods by which the vaccine is prepared.

A large number of men engaged in the South African campaign have undergone this preventive inoculation. Wright[9] has published some officially collected statistics with regard to the results obtained in the military garrison during the siege of Ladysmith. According to these, of ten thousand five hundred and twenty-nine uninoculated soldiers (officers and men), one thousand four hundred and eighty-nine contracted typhoid fever, or 14 per cent.; while, of one thousand seven hundred and five inoculated, thirty-five, or 2 per cent. caught the disease. It is probable that both classes of men were equally exposed to the risk of infection. The case-mortality was the same in both, about 1 in $4\frac{1}{2}$.

These figures are distinctly encouraging. But a larger body of statistics, and a more detailed classification of the cases are required before the question can be settled one way or the other. It will be observed that the Ladysmith figures are contrary to what has been stated in more than one account from the scene of operations,[10] viz: that inoculation, while not successful in preventing an attack of typhoid fever, mitigated its severity. Inoculation with typhoid "vaccine" produces a slight febrile reaction which takes place within a few hours. These are headache, perspiration, slight pyrexia and pain, not only locally, but sometimes in the form of a general aching. Occasionally there may be nausea and vomiting, looseness of the bowels and

shivering. The person inoculated should remain in bed for at least thirty-six hours from the time of inoculation.[11]

The blood of an inoculated individual gives Widal's reaction.

REFERENCES.—[1] "Lancet," Mar. 4, 1899; [2] Ibid., May 5, 1900; [3] "Zeits. f. Hyg. und Infect.," 1899, xxi., p. 133; [4] "Lancet," Mar. 24, 1900; [5] Ibid., Apr. 21, 1900; [6] "New York Med. Jour.," Nov. 4, 1899; [7] "Amer. Jour. Med. Sci.," July, 1899; [8] "Brit. Med. Jour.," Jan., 20, 1900; [9] "Lancet," July 14, 1900; [10] *e.g.*, Wilson, "Brit. Med. Jour.," Apr. 28, 1900; [11] Ibid.; also Dyce Duckworth, "Brit. Med. Jour.," Nov. 18, 1899; and Marsden, "Brit. Med. Journ.," Apr. 28, 1900.

ULCERS OF THE LEG. *T. Colcott Fox, M.B.*

Taroslav Bukovsky, chef de clinique to Prof. Janovsky, at Prague, has examined bacteriologically a hundred cases of ulcers of the leg, and finds, contrary to expectation, that even in foul ulcers the number of microbes is far from being as great as he expected: indeed in many cases only a single species was found. The bacillus pyocyaneus figures in large proportion; others are the staphylococci, the streptococcus, the bacillus coli, the proteus, and once Friedlander's pneumococcus. Less interesting ones are the micrococcus albus, micrococcus sulfureus, bacillus lactis aërogenes, bacillus mesentericus, bacillus subtilis, bacillus tumescens, sarcina, etc. Many disappear directly the ulcer is properly attended to, but others continue to multiply and resist even phenic acid cauterisation. Bukovsky thinks some of the latter have an action in modifying and keeping up the ulceration, and sought to utilise the toxins of these organisms, obtained by different methods, in the treatment of these ulcers.

The toxin used on a hundred ulcers was prepared thus. A culture of bacillus pyocyaneus aged fourteen or fifteen days, made according to Buchner's method, is diluted in a solution of potash and hydrochloric acid, which gives the myko-proteine liquid. The method of treatment consisted in keeping the patient in bed with the leg slightly elevated, and after a warm bath every morning compresses soaked in the liquid were applied and changed two or three times daily. The ulcers did remarkably well, even after the failure of other methods. No effects were produced on general health, or locally on the surrounding healthy epidermis.

REFERENCE.—"Ann. de Derm. et de Syph.," T. x, No. 12, Dec., 1899.

URETER (Surgical Diseases of the). *E. Hurry Fenwick, F.R.C.S.*

Stone in the Ureter.—Newman[1] classifies the pathology of stone in the ureter in the following manner:—

(1.) Calculus impacted in the ureter, the other kidney being compe-

tent: (*a*,) The stone causing complete occlusion of one ureter; (*b*,) The stone causing incomplete plugging, with the escape of urine at intervals.

2,) Calculus in one ureter, the other kidney being incompetent: (*a*,) The stone causing complete occlusion of the ureter of the working kidney; (*b*,) The stone causing incomplete plugging, with the escape of urine at intervals.

When one ureter is suddenly and completely blocked, the backward pressure on the renal blood-vessels diminishes the flow of blood through the kidney, and at the same time distends the pelvis, and as a result, rapid atrophy of the organ occurs. No marked dilatation takes place, for the pelvis and calices are incapable of sudden great distension. When, however, the tube is incompletely blocked, and escape of the accumulated urine is permitted from time to time, a hydronephrosis becomes established. During the periods of temporary relief from pressure, an increased secretion of albuminous urine results from the consequent hyperæmia. A stricture of the ureter allowing of a varying leakage of urine will produce a like distension. Hydronephrosis can only occur when the opposite kidney is able to perform its function sufficiently to maintain life.

Suppression of urine means that the ureter of a working kidney has become completely blocked, while the other kidney is disabled from one of the following conditions: (1,) Reflex inhibition of a healthy kidney; (2,) Impaction of a stone in the ureter of the first kidney at some previous date; (3,) Other unilateral diseases, such as tubercular nephritis, pyonephrosis or congenital absence; (4,) Bilateral disease, such as Bright's disease, cystic degeneration, etc.

The simultaneous passage of two stones and blocking of both ureters must be very rare. Amoden and Morris record cases where a very large vesical stone blocked both ureteric orifices. Morris contributes an important paper on stone in the ureter, to the "Lancet."[2]

Stones in the ureter are only very rarely formed there; they originate in the kidney, and if small and smooth surfaced, and especially if the ureter is previously dilated, reach the bladder.

The difference in the relative number of male and female patients suffering from vesical calculus is explained by the ready means of exit from the female bladder, but this does not hold good for renal and ureteral calculi. In forty-five of the cases of ureteral calculus tabulated by Morris, twenty-seven were female, and only eighteen male.

Stones become impacted in the ureter from their size, irregular shape or rough surface, while inflammatory swelling and ulceration further

impede their progress, and should thickening or stenosis result, the stone is likely to remain permanently impacted.

Some idea of the length of sojourn of a stone in the ureter may be gained by the natural discharge of a calculus some time after a negative exploration of the kidney. Symptoms cannot be relied upon, for they do not differentiate between renal pelvis and ureter.

In nineteen years Morris has explored the kidney six times without finding any stone, when one must have been lurking in the ureter, for in five cases a calculus was subsequently passed, and in one a stone was discovered *post mortem*.

A stone may be arrested at any part of the ureter, but is most likely to become impacted at one of the naturally narrow points. These are: the upper end, one or two centimètres below its commencement, at its point of entrance into the bladder; and lastly, at the brim of the true pelvis.

In forty-four operated cases the position of the calculus was as follows: nineteen cases within two inches of the kidney; fifteen cases at the lower end of the ureter; ten cases about the pelvic brim.

The greater frequency of calculi impacted at the lower end of the ureter in females as compared with males (twelve to three) is worthy of note.

One, or several stones may be present; sometimes the ureter is packed with calculi. A calculus long retained may increase in size by fresh deposits of salts. Some rough oxalate or phosphatic stones become fixed in the ureteral wall, and require to be "dug out," but the other varieties do not show the same tendency to adhere. The exact situation of the calculus can only be ascertained by surgical operation, except in those cases in which it is discovered from the vagina, rectum or bladder, or palpated through the abdominal wall.

Calculi at the upper end of the ureter have usually been discovered after exploration of the kidney, for it is impossible to diagnose by symptoms alone, whether a stone lies in the upper part of the ureter or in the kidney. In nine out of eleven cases of uretero-lithotomy the kidney was the supposed site of the stone.

It is often impossible to diagnose between a calculus lying in a sac formed from the ureter, and a vesical calculus encysted in the neighbourhood of the ureter. Suppurative pyelitis, with intermittent discharge of pus in quantity, is more likely to be present in the former condition.

Cystitis is sometimes simulated by ureteral calculus, but should be excluded by the condition of the urine, and especially its reaction. Cystitis may be caused by a calculus projecting from the ureter into

the bladder, but by means of the sound and rectal, vaginal or bimanual examination, its position will be detected.

Ureteritis, without the presence of a stone, cannot be diagnosed from that caused by stone unless it be tuberculous, when the characteristic bacilli will be found in the urine.

Early vesical tuberculosis is excluded by examination of the urine, and by observing the effect of rest and exercise upon the symptoms.

A prolapsed adherent ovary has been diagnosed where a calculus was impacted at the lower end of the ureter. The points which distinguish a calculus on vaginal examination are its position, the direction of its long axis, its mobility, stony hardness, and distinct localisation from the absence of old pelvic peritonitis.

The prognosis as regards life depends on the condition of the opposite kidney. Morris thinks it is doubtful whether reflex suppression of the secretion of the opposite kidney can occur by blocking of one duct when the second kidney is quite healthy.

Other points of importance in prognosis are the occurrence of infection in the obstructed kidney, and the promptness with which surgical interference is undertaken.

If only one ureter is blocked, and the other kidney apparently sound, Newman advises expectant measures, for it has frequently happened that spontaneous relief of the obstruction has occurred without any permanent damage resulting.

The treatment should aim at reducing spasm and alleviating pain. Opium should be used with great caution. Diuretics are of very doubtful value. Morris points out the great danger to the kidney, and even to the life of the patient, by delaying operation beyond a few hours.

In the case when the only working kidney is blocked, operation should be early, and the obstruction removed, or at least escape of the urine by the lumbar wound be provided for, and the search for and removal of the stone undertaken later.

The operation performed for removal of the stone will depend on its situation. When the stone lies within reach of the finger in the vagina or rectum, it may project into the bladder covered by mucous membrane, and may then be removed through the dilated urethra in the female, or in the male by suprapubic cystotomy or perineal incision. If it lie outside the bladder wall, it should be approached from below (Newman).

Ceci removed a stone from the ureter through the rectum, and Fenwick has used a perineal incision. Emmett, Cabot, Cotterall,

Fenwick, Requey, and others, have removed ureteral calculi through the vagina.

When the stone lies beyond the reach of the finger, the ureter may be exposed extraperitoneally through an incision used for ligature of the common iliac artery. The usual method is by an oblique incision commencing at the outer border of the erector spinæ, an inch below the last rib, and passing down inside the anterior superior iliac spine, the length depending on the nature of the case.

Morris advises that the stone should, if possible, in every instance, be dislodged from the seat of impaction and removed through an incision at some distance away. Stricture of the ureter should, if present, be treated at once after removal of the stone.

The same author, in discussing the *various methods of exposing the pelvis of the kidney and ureter*,[3] puts the following questions: "How can the ureter best be reached for the purpose of being examined?" and secondly: "Ought the operation to be performed through the same route as the examination is made, or by another?"

The two chief methods of approach are the transperitoneal and the extraperitoneal. When there is doubt as to which ureter is affected, the peritoneal cavity may be opened in the middle line, and both examined, but when information is required as regards the part of one ureter affected, the incision is better placed in the semilunar line. The transperitoneal examination of the ureter, even more than of the kidney and its pelvis, is "imperfect and incomplete," for its small size and extreme pliability, and the manner in which it is hidden by the viscera renders palpation difficult and uncertain. The kidney forms the landmark from which the examination starts in exploring the abdominal portion of the ureter, while, if the pelvic section be the object of attention, the iliac vessels form the best guide. A strictured, stenosed or calcified ureter will be more easily discovered, but even an enlarged ureter may not be recognised; in one case it was taken for the bowel, in another, for the iliac vein (Chaput), and on the other hand, a chain of enlarged lymphatic glands may resemble a dilated ureter (Poncet).

Having obtained the desired information the operation for removal of the obstruction must be performed by the extra-peritoneal route.

The incision for the extra-peritoneal exposure of the ureter commences in the loin, as already described, and passes an inch internal to the anterior superior iliac spine, and then parallel to, and an inch above, Poupart's ligament, reaching, if necessary, the external abdominal ring. Examination begins with the renal pelvis, and

the ureter is exposed to the required distance, and, if necessary, the pelvic portion of the ureter is examined by extending the wound forwards.

Other methods have been suggested for examination of the pelvic portion of the ureter. In the male there are five. The rectal (Ceci), the hypogastric (Albarran, Glantenay, Tuffier), the sacral (Delbet, Cabot, Fenger, and others), the perineal (Ullmann), and the ilio-inguinal. In the female the vesical and the vaginal are the chief routes.

In a paper on the importance of *plastic surgery in renal distension*, Mr. Henry Morris[4] makes special reference to stenosis of the ureter, and includes under this heading valvular obstruction and strictures.

The septic or aseptic dilatation of the kidney resulting from these conditions is only in some cases sufficiently marked to be recognised by palpation, and even then the cause may not be suspected, and certainly will not be proved without surgical operation. When a renal swelling is absent there are no symptoms which can lead to a correct diagnosis, and the case will usually be considered as one of renal calculus or tubercle, or where the dilated kidney is movable the symptoms will most probably be referred to the mobility.

Sometimes vaginal examination will show a tender, firm cord, or a hard fixed mass, but this may be present in any form of ureteritis. The passage of a ureteral catheter may detect an obstruction, if the stricture be near the bladder, and the instrument is sometimes grasped when the operator attempts to withdraw it (Kelly). Dilatation of the ureter can sometimes be diagnosed, as Kelly has pointed out, by a large quantity of urine rapidly flowing from the ureteral catheter passed through the stricture. Exploration of the kidney and ureter should be carried out in all cases in which the symptoms lead to a suspicion of stricture, or valvular obstruction of the ureter where vaginal and rectal examination are negative. Very often, without previous evidence of a renal tumour, the exposed pelvis is found considerably dilated. An incision in its posterior surface is followed by a thorough palpation of the kidney and pelvis for stone. Should this be negative the upper inch or more of the ureter is exposed, and a valve stricture, or some abnormal renal vessel, sought for, and failing this, a fine catheter is passed down the tube. Should the passage into the bladder be free, and a pronounced degree of mobility of the kidney be present, it may be concluded that fixation of the kidney will cure the condition. A valve or stricture at the junction of the ureter or pelvis is relieved by a longitudinal incision through the obstruction,

united transversely by fine sutures which do not penetrate the mucous lining, and after withdrawing the ureteral bougies the pelvic wound is closed by Lembert's sutures.

A valve, due to the ureter being adherent to a hydronephrotic sac, and the opening being situated high up in the wall, is treated by division down to the lowest part of the sac and union of the ureteral and pelvic edges. When, in addition, a stricture is present at the upper end of the ureter, resection of the part of the ureter involved and implantation of the divided end into the lowest part of the sac, should be adopted (Küster's operation).

Alsberg dilated a ureteral stricture by bougies passed through a nephrotomy wound kept open for the purpose. After ten days the urine began to pass into the bladder, and the lumbar fistula was closed after some months without recurrence of the hydronephrosis.

Pawlik and Kelly have treated strictures situated near the bladder by passage of ureteral bougies. Kelly's case was unsuccessful.

Uretero-vesical grafting may be tried for stricture situated low down before proceeding to form a permanent lumbar or vaginal fistula, but nephrectomy is better, provided the other kidney is healthy.

Boari[5] recommends the use of a button which he has devised for the purpose of implanting the ureter in the bladder. Failing this, he recommends implantation in the intestine.

Injuries to the ureter during pelvic operations form a very important part of ureteral surgery. Not only is the normal position and relations of the ureters difficult to determine, but they may be displaced and distorted by adhesions, and surrounded by malignant growth. Ruhl and Chrobak[6] report cases in which the ureter passed through a uterine fibroid, and Markoe and Wood[7] describe a case in which the ureter was deliberately cut and ligatured, its real nature being mistaken from its position high out of the pelvis, and its very close relation to a uterine fibroid. In this case no urine was passed for twenty-four hours, and on discovery of a portion of the ureter adhering to the tumour, the abdomen was again opened, and both ureters found distended to the size of a little finger. One was merely kinked in the peritoneal flaps, and easily released ; the other was found severed and ligatured, and an end to end uretero-ureteral anastomosis performed, which was completely successful.

This case is interesting from the absence of pain and the complete re-establishment of the renal function after twenty-four hours' total obstruction. Zweifel has also reported a case where both ureters were tied for thirty-six hours, and complete recovery followed their release.

REFERENCES.—[1] "Brit. Med. Jour.," Apr. 21, 1900 ; [2] "Lancet," Dec. 16, 1899 ; [3] "Clin. Jour.," June 28, 1899 ; [4] "Lancet," July, 1899 ; [5] "Il Policlin.," July 15, 1899 ; [6] "Pediat.," vol. viii, No. 11 : [7] "Ann. Surg.," June, 1899.

URETHRITIS. *J. W. Thomson Walker, M.B., F.R.C.S.*

Chronic Urethritis.—Janet[1] describes three forms of chronic urethritis : (1,) Independent of gonococci. This may be infectious or non-infectious, the latter occurring in rheumatic or strumous individuals. It may follow alcoholic or sexual excesses or cycling ; (2,) The sequel of gonorrhœa ; (3,) Chronic urethritis due to disease of the bladder, ureters or kidneys.

Treatment includes injections, irrigations, instillations of ointments, bougies, dilatation and endoscopic treatment.

Janet prefers irrigation treatment, and uses solutions of **Corrosive Sublimate** (1 in 20,000 to 1 in 10,000), **Silver Nitrate** (1 in 5,000 to 1 in 1,000), **Protargol** (1 in 1,500 to 1 in 1,000), **Zinc Sulphate** or **Chloride, Ichthyol** and **Boric Acid** (4 in 100). He has found Finger's formula useful, namely : iodine 1 gramme, potas. iodid. 5 grammes, olive oil 5 grammes, and lanolin 95 grammes. This is smeared on a sound or bougie and introduced.

Desnos and Guillon[2] very highly recommend instillations of **Picric Acid** in the treatment of chronic inflammation of the anterior or posterior urethra ; 20 to 80 drops of a solution of 1 in 200 or 1 in 100 is injected. There is little pain, and this quickly passes off. No spasm follows, nor is there an increased discharge.

Thomas[3] found 5 per cent. instillations of protargol possessed the following advantages over silver nitrate : They were painless, caused no re-appearance of the acute stage, and could be repeated daily, and thus a quicker cure obtained.

Ehrmann, from observations on thirty-two cases of chronic posterior urethritis, considers that the administration of **Urotropin** (hexamethylentetramin) in doses of 7½ grains has a remarkably beneficial effect. In cases with cloudy urine which resist for long the effect of deep injections and irrigation of the posterior urethra and bladder, this drug gave excellent results, the urine becoming clear in three or four days after the beginning of the treatment.

REFERENCES.—[1] "Rev. de Thérap.," Dec., 1898 ; [2] "Jour. de méd. de Paris," No. 41, 1899 ; [3] "Wien. méd. Presse," Jan. 18, 1899.

URINE. *Prof. R. Saundby, M.D., LL.D., F.R.C.P.*

Predöhl[1] has described bacteriuria as occurring in acute, sub-acute, and chronic forms which correspond to the description very severe, severe, and mild. All his patients were women. The disease attacks

suddenly individuals whose previous health has been good. He thinks exposure to cold, long retention of urine, and habitual constipation play some part in its causation. In all instances the organism found was the bacillus coli. **Salol** internally gave the best results, and **Warm Baths** afforded great relief, but the prognosis must be regarded as doubtful and the disease is always serious. Escat [2] has related two cases of alkaline bacteriuria of quite a different type to Predöhl's, as they occurred in men and were probably due to the use of instruments. They were cured by daily irrigations of the bladder with **Boracic Acid** without the use of a catheter. Richardson [3] insists on the value of **Urotropin** as a disinfectant of the urine after typhoid fever. The typhoid bacillus was found in nine out of thirty-eight cases in one series, and in fourteen out of sixty-six in another. Of the latter series nine cases were treated with urotropin, and in every instance the bacillus disappeared from the urine. The drug was administered in doses of 10 grains three times a day. He thinks that all cases of typhoid fever should be treated during convalescence by the administration of 30 grains daily for ten days in order to secure the disinfection of the urine, which he holds to be important in the interests of public health. Cammidge [4] confirms this action of urotropin and makes some suggestions as to the regular treatment of typhoid fever patients by this drug. He considers it to be extremely useful in cystitis or enlarged prostate and stone, in bacteriuria and nocturnal enuresis. Ashurst [5] has found that **Benzoic Acid** has a marked influence in indefinitely postponing the occurrence of alkaline fermentation of the urine. It does not increase the acidity, but seems to possess a distinct germicidal quality which is developed in the urine so that it may be exposed for several days with very slight growth of bacteria. This drug prevents the decomposition of urine into ammonia and carbon dioxide, and thus averts the danger of cystitis.

Barium chloride has been introduced as a new test for bile pigment in the urine. According to Jolles [6] 10 c.c. of urine should be shaken with 1 c.c. of chloroform and 5 c.c. of a 10 per cent. solution of barium chloride and the mixture be allowed to settle. The clear liquid should be decanted off and the residue shaken with 2 or 3 c.c. of Hubl's $\frac{N}{100}$ iodine solution and 1 c.c. of strong hydrochloric acid. If bile pigment is present the chloroform solution, the supernatant fluid, and the precipitate are all coloured green or greenish blue. Biffi's [7] plan is to take 150 to 200 c.c. of urine, strongly acidify with sulphuric acid, then add drop by drop a 5 per cent. solution of barium chloride in the proportion of 30 drops to every 100 c.c. of urine, drain off the

liquid urine and pour the soft precipitate upon a piece of absorbent wool. Spread the precipitate evenly over the surface of the wool, and place upon it a crystal of bichromate of potash. If bile is present a green ring will appear round the crystal, changing later to blue and then red. Fuming nitric acid may be used, but this reaction is neither so delicate nor so rapid. A small quantity of albumen does not disturb the reaction, but if there is much a saturated solution of sulphate of soda should be substituted for the sulphuric acid.

At a meeting of the Royal Medical and Chirurgical Society Bradshaw and Warrington [8] described a case which was at first characterised by the persistent occurrence of albumen in the urine. Shortly before death indications appeared of softening of the ribs and sternum, and at the autopsy it was found that the softening of the bones was due to multiple myeloma. In a subsequent communication to the Liverpool Medical Institution they pointed out that the peculiar body known as Bence Jones's Albumen, had been recognised in all eleven undoubted cases, and that in all these it had been associated with bone disease.

The origin of oxalic acid in the urine is somewhat peculiar. A certain amount is undoubtedly introduced into the body with the food, but it is improbable that the excessive quantities deposited as oxalate of lime in certain cases of neurasthenia are due merely to an increased quantity of oxalic acid being taken in the diet. Lommel [9] believes that its elimination bears a direct relation to albuminoid metabolism, and that a diet which is rich in nuclein induces, in addition to an increased elimination of uric acid, a considerable increase in the elimination of oxalic acid.

REFERENCES.—[1] "Munch. med. Woch.," Nov. 7, 1899; [2] "Jour. of Cutan. and Gen.-Urin. Dis.," Feb., 1900; [3] "Jour. of Exp. Med.," Jan., 1899; [4] "Brit. Med. Jour.," Mar. 17, 1900; [5] "Phil. Med. Jour.," Feb. 24, 1900; [6] "Zeit. f. Phys. Chem.," 1899. vi, p. 83: [7] "Gaz. degli. Osped.," Feb. 11, 1900; [8] "Brit. Med. Jour.," Dec. 28. 1899; [9] "Archiv. f. klin. Med.," v and vi.

URTICARIA CHRONICA. *T. Colcott Fox, M.B.*

In the "Journ. Cut. and Gen.-Urin. Dis.," for October, 1900, p. 470, a case recorded by J. K. Hieleman is reported from the "Bull. Med. and Surg.," 1900, in which a woman, aged forty-six years, suffered for ten years from intense itching at first of the arms and feet, but gradually extending over the whole body. Simultaneously wheals developed over the itching regions, but for the most part disappeared. Some persisted and became transformed into itching verrucose tumours, in size from a hemp-seed to a cherry. Not all of these persisted, but others formed. The external borders of the arms and feet

were particularly affected. There were a few on the trunk, nucha, and face. Microscopically, the horny, lucid, and granular layers were found thickened. The papillæ were enlarged, and the reticulum thickened. There was an abundant cell infiltration, especially in the papillary and sub-papillary layers, which, however, involved to some extent the deeper layers and the entourage of the coil glands.

J. C. Johnston identifies this case with the affection he has reported ("Jour. Cut. and Gen.-Urin. Dis.," 1899, xvii, p. 49) under the title: "*A papular, persistent dermatosis.*"

Kreibich,[1] in a paper on *Chronic Urticaria*, divides the cases into those in which new wheals continue to evolve for long periods, and those in which the wheals themselves are persistent. In the first kind the wheals may not be excoriated or leave pigmentation, or they may be rapidly torn out and encrusted and leave pigmentation. He distinguishes a papular and a verrucose persistent form.

The late Morrant Baker exhibited some years ago a remarkable case of verrucose urticaria, of which the writer possesses a portrait.

For *Chronic Urticaria* see "Œdema, Angio-neurotic," p. 398.

REFERENCE.—[1] "Arch. f. Derm. u. Syph.," 1899, T. xlviii., p. 163.

UTERUS (Cancer of the). *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

Early Diagnosis.—Upon the importance of this, all writers are agreed. It is a matter that comes within the province of the family physician rather than of the specialist. We may safely assume that in these days the great majority of practitioners are fully alive to the importance of the subject; and yet the number of cases that are discovered too late for curative measures is very great.

Wiggins[1] considers that the responsibility for this failure to recognise the disease during the earlier months of its invasion rests largely upon the general practitioner into whose hands these patients usually come first, and who seems to be largely imbued with the popular idea that all sorts of menstrual irregularities may occur during the last years of a woman's child-bearing period of life, without being of serious import, unless accompanied by a story of pain, foul vaginal discharge and evident cachexia, forgetting that, as Baldwin has recently pointed out, these last are the "symptoms, not of incipient, but of inoperable disease."

We think, however, that the blame cannot be entirely laid on the medical profession: for although there are cases in which a patient has been treated for hæmorrhage without an examination being even suggested by the medical attendant, it has, we feel sure, much more often been the case that the patient has either not mentioned the

matter to her doctor until too late, or has not consented to a vaginal examination until the specialist has been called in.

In discussing early diagnosis, Veit[2] points out that a cancroid of the vaginal portion occurs in early life, and malignant disease of the uterine body after the menopause. An early diagnosis of both these forms is not difficult, the former being characterised by bleeding on slight mechanical disturbance; the latter by a spontaneous bleeding after the menopause. Scrapings examined with the microscope usually give positive evidence. Cancerous nodules in the cervix, or infiltration of the cervical mucous membrane, are more difficult of detection; the latter causes a catarrhal discharge, the former simply pain in the sacrum, pressure, and similar vague symptoms. Bleeding does not occur early. Swelling of the cervix, particularly behind the external os, thickening and increased density, together with a certain patulousness of the os to the examining finger, combined with excision of a portion of the apparently diseased tissues for microscopical examination, may aid in making a diagnosis.

A writer in the "British Medical Journal,"[3] commenting on a paper by Gessner,[4] remarks that clinical symptoms are apt to be extremely misleading. Thus, in old women, pyometra and senile endometritis may cause as fœtid a discharge as ever is seen in cancer. The sound, however skilfully employed, is no sure guide in the detection of cancer of the body; even after dilatation of the cervix it may fail to touch a patch of incipient cancer or to prove to the investigator that the patch, should it be touched, is really cancerous. Gessner insists that the curette, followed by microscopic examination of the material which it brings away, is the only trustworthy instrument for diagnostic purposes. Relics of ova or of broken-down mucous polypi, when carried away on the tip of the sound, are often taken for cancerous tissue, so that he says we must know how to use the microscope, even when we know how to scrape.

Gessner relates two cases, which are very important as showing the value of microscopic examination.

Wiggins (*op. cit.*) dwells on the fact that pain in these cases is an unreliable symptom, only occurring late in the disease except in certain cases, where the patient complains that she suffers from attacks of agonising cramp-like pains which recur during the latter part of each afternoon. Such a symptom when present in an elderly woman, is almost pathognomonic of cancer of the uterine body and is due to pent up secretions in that organ. Hæmorrhage is a constant symptom, but of the later stages of the disease, as is also the foul smelling vaginal discharge.

Savor[5] reports the occurrence of cancer in the cervical stump after supravaginal amputation.

The writer also refers to three other cases in Chrobak's clinic in which the cervical stump subsequently became cancerous; also to a fifth unreported case, and regards this as a strong argument in favour of pan-hysterectomy.

The treatment of Inoperable Cancer of the Uterus.—In view of the number of cases of this kind which are met with, the question of treatment becomes an important one; and various measures have been advocated. The employment of **Methylene Blue** has been advocated by More-Madden (see "Med. Ann." for 1900, p. 616). A case of vaginal cancer where good results were obtained is referred to in the present volume (see "Vagina"). Penrose, Jessett, and others have advised the use of **Zinc Chloride,** the manner of applying which is thus described by Wiggins: After the hæmorrhage has been got under control by previous curettage and packing with pledgets of cotton soaked in hydrazone the packing is removed, and the parts are thoroughly irrigated. The vagina and vulva should next be well anointed with a salve composed of 1 part of sodium bicarbonate and 3 parts of vaseline. The uterine cavity is then packed with small pieces of cotton wrung out in a solution of chloride of zinc, which should vary in strength from 50 to 100 per cent., according to the thickness of the remaining uterine tissue. Any excess of this solution must be rapidly removed with sponges, and the vagina should be filled with cotton soaked in a saturated solution of bicarbonate of sodium. Forty-eight hours later all this packing is to be removed, and the parts again irrigated. The hæmorrhage is controlled, the offensive discharge disappears for a considerable time, and the patient being relieved in a large measure, of her sepsis, improves in appearance and gains rapidly in weight. Lucas-Championnière advises the use in these cases of **Carbide of Calcium,** and gives the following technique for its application: The vagina is first irrigated and then a small piece of the carbide is to be placed against the ulcerated surface. Bubbles soon appear showing that acetylene gas is being generated. The vagina is now to be carefully packed with iodoform gauze. This is to prevent the irritant effects of the products of decomposition of the carbide of calcium on the mucosa of the vagina and vulva. The packing should be allowed to remain in place for three or four days and then is to be removed. The parts should then be irrigated and all crusts removed. This procedure can be repeated at intervals of from two to six weeks as needs be. The claim made for it is that it stops hæmorrhage,

thoroughly suppresses odour, and relieves pain in a large proportion of the cases so treated.

This plan has not been received without criticism ; Ries[6] affirms that its action is identical with that of the ordinary caustic lime. He is inclined to attribute the beneficial effects rather to the preceding curettement than to the carbide of calcium, and cautions the profession against expecting any marked results from its use.

Jonnesco[7] has suggested the ligature of the arterial supply of the uterus. In a case in which he carried this out, laparotomy was performed ; the utero-ovarian arteries on both sides were ligatured, so were the two round ligaments with their vessels, and a ligature *en masse* of the uterine vessels at the level of the insertion of the vagina upon the cervix was carried out. The two hypogastrics were also tied 2 c.cm. below their origin, and the small peritoneal wounds made to expose the arteries were closed.

Although the improvement could be only temporary, he thought that the results were encouraging. On the other hand, Lœwy,[8] in a communication addressed to the Paris Anatomical Society, criticises the operation from an anatomical stand-point, showing that it does not retard the progress of the disease. When the disease is in the operable stage hysterectomy is always preferable, and, if that is impossible, curettement and cauterisation offer a better prospect of arresting the hæmorrhage than ligation of the uterine arteries.

Gottschalk[9] has suggested the following procedure : The growth is first thoroughly cauterised with the Pacquelin cautery, so as to make the surface as clean and aseptic as possible, and to diminish it in bulk. Then a circular incision is made around the vagina in the healthy part below the growth, the Pacquelin cautery being used to make the incision. A cuff of vaginal wall is now stripped up and turned inwards, covering up the growth. The cuff of tissue is kept in position by a gauze tampon for a week. The cicatrisation resulting from this procedure closes the vagina below the growth, and the squamous epithelium now turned towards the growth will resist invasion for five or six months, perhaps. During this time the patient is spared the misery and exhausting effect of foul discharges and hæmorrhage.

Parsons[10] reviews the subject of cancer from the aspect of its parasitic origin ; and in view of the fact that the **Salicylates** exert a powerful inhibitory influence on the growth and development of the saccharomycetes, he suggests the internal administration of these drugs in inoperable cases. The suggestion is admittedly made on theoretical grounds.

Vaginal Hysterectomy for Cancer.—This is the procedure universally recommended when the case is seen early enough. But authorities differ as to their interpretation of the qualifying clause. The majority hold the view that when the growth has extended beyond the uterus, the case is inoperable. Veit (*op. cit.*) says that when the disease has extended beyond the uterus, in the vast majority of cases operation is hopeless, since a complete removal is impossible. The operation required is, moreover, so extensive that many patients will necessarily perish as an immediate consequence. The removal of the iliac and vertebral glands should always be practised when these can be felt. At the best, operations upon these cases of wide-spread disease can save only an occasional one ; hence the main hope of better statistics in operation for cancer lies in a more general, cultivated diagnostic skill.

Landau [11] adopts a much wider indication and thinks that if by any method it be possible to totally extirpate the carcinoma in and around the uterus, the attempt should be made. Such a method is to be found, in his experience, in the removal of the entire internal genitals, together with the entire broad ligaments, *per vaginam.* This is effected with the aid of clamps, not with ligatures, because with the crushing and necrotising effects of the clamp upon the tissues grasped, we can extend the operation to regions which the ligature cannot reach or where it must remain ineffectual. This method especially enables us to extirpate by the vagina approximately every carcinoma which is limited to the uterus. If the carcinoma has already spread to the vagina, then during the course of vaginal hysterectomy the posterior vaginal wall can be removed in its whole extent. When the anterior vaginal wall is affected, the bladder should be examined with the cystoscope, an instrument absolutely necessary to the modern gynæcologist. When the carcinoma has spread to the parametria and the uterus is not greatly enlarged in size, vaginal total extirpation is technically possible and therefore indicated. And lastly, in a case of carcinoma of the uterus complicated with tumours or inflammatory troubles of the adnexa, with the proper technique, vaginal hysterectomy can be performed and completed.

Ries and Clarke [12] advocate an extensive procedure based on the fact that recurrence after ordinary hysterectomy often takes place in the lymphatics and pelvic cellular tissue. Their plan is as follows :—

If the growth be located in the cervix the sharp spoon is used to remove as much of it as possible, and either the lips of the os are closed with sutures, or a cap is fixed over the portio vaginalis so as to cover the affected area. The abdomen is then opened, and an

extensive dissection of the pelvis is made, which results briefly in the removal of the whole of the pelvic connective tissue (broad ligaments, utero-vesical ligaments, meso-rectum, etc.), with its groups of glands situated along the internal iliac vessels, the sides of the sacral hollow, and the common iliac vessels up to the bifurcation of the aorta. In the process the ureters are dissected out and held aside out of harm's way, and the great vessels on both sides are all laid bare by blunt or sharp dissection. Finally the uterus is removed, and the peritoneum closed over the exposed pelvic fascia. If enlarged and fixed glands are discovered, the removal of the uterus alone is advised.

Results of Operations for Uterine Cancer.—Just as surgeons differ in their estimate of the indications for operation, so they vary in their views as to the amount of good that is done by operation. A writer in the "British Medical Journal" says that a long experience of vaginal hysterectomy has now shown that it can only claim to be a palliative operation, and Dr. Halliday Croom has recently declared his opinion that sometimes it positively shortens the patient's life, owing to the rapidity of the recurrence. Lea expresses the same view. On the other hand, Veit, Fraenkel, and Landau are more optimistic.

RRFERENCES.—[1] "Med. Press and Circ.," June 7, 1899; [2] "Berlin. klin. Woch.," No. 15, 1899; [3] "Brit. Med. Jour.," Jan. 27, 1900; [4] "Münch. med. Woch.," No. 52, 1899; [5] "Cent. f. Gyn.," No. 50, 1898; "Jour. Amer. Med. Assoc.," No. 29, 1898; [7] "Bull. et Mém. Soc. de Chir. de Bucharest," Dec., 1898; [8] "La Gynécologie," June 15, 1899; [9] "Cent. f. Gyn.," No. 3, 1899; [10] "Brit. Gyn. Jour.," May, 1900; [11] "Brit. Med. Jour.," May 27, 1899; [12] Ibid., May 6, 1899.

UTERUS (Diseases of). (See also "Endometritis," "Pelvic Surgery," etc.). *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

Fibromyoma of the Uterus.—The question of uterine myomata continues to occupy a larger share of the attention of gynæcologists than any other subject. The mortality attributable to them is discussed in a paper by Champneys[1]; and a special sitting was devoted to them at the Ipswich Meeting of the British Medical Association.[2]

Indications for Operation.—These are excellently summarised by Champneys (*op. cit.*). For instance, he says, "bleeding is a symptom which may urgently call for relief by operation, though deaths from hæmorrhage are extremely rare. A perpetually recurring severe loss of blood may ruin a life even if it does not cause death, and may expose a patient to a greatly increased risk from many intercurrent diseases. It must be remembered, also, that long-continued severe hæmorrhage is apt to interfere with the power of making blood; it destroys the mint as well as the bank. Pain, again, though very diffi-

cult to estimate in another, may be a correct indication. In this matter objective signs of suffering, such as loss of sleep and affection of the pulse during the pain, are to be carefully observed and are of more value than graphic descriptions on the part of the patient. Pain may ruin a life though it probably never causes death. Pressure symptoms, apart from pain, are often an urgent indication for operation. Dangerous pressure symptoms almost invariably affect the urinary tract and cause retention of urine, a condition which should not be allowed to continue, as directly threatening life. A comparatively small fibroid impacted in the pelvis and causing retention, if it cannot be pushed up into the abdomen, should be removed without delay.

"Rapid growth is often an urgent indication for operation, especially when accompanied by bleeding, but I have seen a fibroid rise in a few weeks from just above the brim nearly to the costal arch, become markedly elastic, and then as rapidly shrink into the pelvis, doubtless from œdema. Still, rapid growth in a young subject, especially when accompanied by severe bleeding, is often an urgent indication. Mere size may or may not be an indication for operation. A large subperitoneal fibroid well up into the abdomen usually produces no symptoms except weight. The absence of a rigid wall anteriorly preserves the organs from pressure as a very general rule. The question here is usually one of convenience. Under these circumstances the proper course is to explain the real situation to the patient and let her choose. If she has to earn her own living she will probably claim (and justly claim) to be relieved of a burden which may interfere with her living. If well off, she may or may not wish to run the risk of operation. A cystic fibroid will grow, and it should be treated as an ovarian tumour—that is, it should be removed. In practice it will often be mistaken for an ovarian tumour. Malignant degeneration, though often talked of, is seen very rarely indeed. Its chief sign would be rapid growth, of which we have already spoken. I have never seen a case in which a well-marked fibroid has taken a malignant growth."

The Influence of the Menopause upon Fibroids.—The traditional view, and one of the chief arguments of the extreme conservative school, is that the great majority of fibroids cease to grow with the onset of the menopause. There is a growing tendency to discredit this view. Thus Landau[3] says that the good effect generally attributed to the menopause is seen only in exceptional cases. Too often the presence of the fibroid postpones the cessation of menstruation indefinitely, so that, metrorrhagia continuing, the operation has to be performed after

all, but with less chance of success. Jordan[4] and Murray[5] hold similar views.

TREATMENT.—Efforts to cure fibroids by non-operative measures will probably always find some adherents. Animal extracts are still being tried. We referred in the "Medical Annual" for 1899 (p. 281) to the employment of thyroid extract. Shober[6] advocates the use of **Mammary Gland** and **Parotid Gland** preparations in the treatment of fibroid tumours of the uterus and in certain forms of ovarian disease respectively. Since he began to use the mammary gland tissue, more than a year ago, he has only operated on one case of uterine fibroid where the pressure symptoms and hæmorrhage were too urgent to permit of palliative treatment. He has treated a number of cases, ranging from large multinodular tumours to small subserous nodules, with satisfactory results, the menorrhagia and metrorrhagia ceasing and the tumours diminishing in size. The gland is administered in the form of tablets, each containing an equivalent of 20 grs. of the fresh gland, 3 to 6 tablets being given daily.

In the near future we may have to record that **Electricity** in the treatment of fibroids is as obsolete as the serre-nœud in their removal. Herman,[7] a calm and judicial observer, says "I think the electrical treatment of fibroids is now almost extinct. It has been used in the London Hospital, but we have not obtained any good results from it. Here, as well as elsewhere, unquestionable uterine fibroids have been shown over and over again to exhibit no diminution in size by the treatment. Moreover, there have been deaths recorded from the application of electricity by puncture, and there have been other cases in which the treatment has produced sloughing. So that I think the harm following the electrical treatment of fibroids is greater than the benefit. Indeed, the evidence leads me to doubt whether electricity has any beneficial effect."

Equally emphatic is the condemnation of another recent writer, Duncan,[8] who says, "The intra-uterine application of a continuous current varying from 15 to 250 milliampères was some years back ushered in with a flourish of trumpets as a remedy which would do away with the necessity for operations on fibroids; but, alas, it has not stood the test of experience, and almost all observers who have tried it, whilst admitting that by its cauterising action on the endometrium it may give temporary relief, agree that it very rarely cures nor does it cause the fibroid to dwindle away. According to Vineburg, who collected cases from Keith, Engelmann, Gautier, and others particularly skilled in the treatment, out of three hundred and seventy-two cases treated nine were cured and five died. The treatment of fibroids

by galvano-puncture is unsurgical and dangerous and should never be attempted."

Operative treatment of fibroids :-

(*a*.) *Double Oöphorectomy.*—This operation, though not abandoned, is performed much less frequently than formerly.

Many operators no longer admit oöphorectomy as having any indications. Bland-Sutton[1] rejects it mainly on the ground that whilst the uterus is in no way essential to a woman's health, the ovaries play an important part, and exert a tyrannical influence over the life and well-being of women. Duncan condemns it on account of its results, and says that this operation, which was frequently practised some years back, has now rightly fallen into desuetude, because not only was it found sometimes impossible to remove the appendages owing to their being firmly adherent to the uterus, but the mortality was not insignificant and (most important of all) the operation sometimes failed either to stop the growth of the tumour or to check the hæmorrhage.

(*b*.) *Enucleation of Myomata.*—By this is meant the shelling of myomata out of the substance of the uterine wall. It may be done through the vagina or by abdominal incision.

Jordan considers that the cases suitable for enucleation are few in number ; and in spite of the advocacy of Alexander, of Liverpool, and of Howard Kelly, in America, he cannot bring himself to regard the free incisions of the uterus or the suturing up of large holes in the uterine wall as free from the danger of hæmorrhage.

We believe from the views recently expressed concerning enucleation that in the near future it will practically be restricted to solitary myomata that are becoming polypoid (either submucous or subserous), and to a few other exceptional cases.

(*c*.) *Myomectomy.*—This term is sometimes used to describe any operation for the removal of a myoma or myomata when the uterus is left behind. It is highly desirable, however, that it should be restricted to cases in which a pedunculated myoma is removed, through the vagina if submucous, or through the abdomen if subserous ; the term "enucleation" being employed in the cases referred to in the previous paragraph, in which a myoma is shelled out from the substance of the uterine wall. By many writers the terms are already employed respectively in the sense that we advocate ; and it will tend to clearness and simplicity if the usage becomes general. With regard to subserous pedunculated myomata and small submucous ones there is a consensus of opinion that myomectomy, abdominal or vaginal as the case may be, is the proper procedure.

With very large submucous myomata, there is some divergence in practice; some surgeons prefer hysterectomy; others advocate vaginal myomectomy, and others again abdominal myomectomy by Martin's procedure. Garrigues[10] records a case in which a large uterine myoma was removed by morcellement, after bilateral division of the cervix. Briggs[11] practises anterior mesial section of the dilated cervix, after separating the bladder as in vaginal hysterectomy, and claims that this gives plenty of room for piecemeal extraction and enucleation. He believes that the enucleation of submucous and interstitial growths is rendered as safe as hysterectomy by the vaginal route.

[We may point out here the practice, which we deprecate above, of using one word, in this case "enucleation," to describe the removal of both submucous and interstitial growths. The distinction is the more to be desired because myomectomy or the removal of submucous growths comes under a category where there is no difference of opinion; whereas enucleation, or the removal of interstitial growths, is really a different operation and one that is subject to conflicting views.]

Braithwaite[12] reports a case in which he deliberately opened the uterus by abdominal section for the removal of a large solid myoma contained in its cavity; and thinks that this plan should more often be followed, as an alternative to the removal of the uterus.

Evans[13] successfully performed an abdominal myomectomy for a subperitoneal myoma complicating pregnancy, and discusses the indications for operative interference in such cases. He endorses Kelly's rule for intra-ligamentary and subperitoneal cervical fibroids, viz., that operation should not be undertaken unless the fibroid is of such a size as to encroach upon the pelvic room and the superior strait in such a way as to prevent labour; and also considers that rapid growth of a tumour in other situations and excessive pain may necessitate operation.

(*d*,) *Supra-vaginal Amputation of the body of the Uterus.*—This operation seems to be the one most frequently performed. At a meeting of the Leipsic Obstetrical Society[14] a discussion of the relative advantages of total extirpation and supra-vaginal amputation developed the fact that the latter was the favourite method. Abel thought that the size of the stump was immaterial. Only two cases of subsequent sarcomatous degeneration had been reported.

Sänger held that the possibility of malignant degeneration of the stump was so slight that it did not furnish an argument in favour of total extirpation. He was sure that a stronger pelvic floor remained after amputation.

Zweifel said that for several years he had not observed exudates around the stumps. He made it a practice to leave as large a stump as possible, in order to preserve some of the mucous membrane.

At a meeting of the Harveian Society Gow[15] supported the view that of all the radical operations for fibroids, abdominal hysterectomy with intraperitoneal treatment of the stump was the best, and was an operation which might confidently be expected in the future to give a mortality of not more than 1 or 2 per cent.

Herman points out that there are many operations which can be done for uterine fibroids, and each has its own sphere. There is no such thing as an operation which is the best for every fibroid; nevertheless, "for most cases the best operation is the supra-vaginal amputation of the uterine body." Duncan and Bland-Sutton also prefer this operation. Carstens[16] thinks that the cervix should be left when it is free from tears and has a healthy mucous membrane.

(*e*,) *Panhysterectomy.*—As Herman observes, the term "hysterectomy" is sufficient to describe this operation, the prefix "pan" being superfluous. This operation is generally advocated when the cervix is unhealthy, or the seat of malignant disease. Some operators, however, prefer it in every case. It is advocated by Doyen, Smyly, and notably by several surgeons of the Birmingham School (Jordan, Edge, and Christopher Martin). Jordan (*op. cit.*) considers that there are three important reasons for removing the cervix: (*a*,) The securing of better drainage; (*b*.) The risk of a re-formation of myomatous nodules in the cervix; (*c*,) The risk of malignant degeneration in the stump. Many surgeons, however, hold that the danger of the latter complication has been greatly magnified (see Sänger, quoted above).

When hysterectomy appears to be indicated, Jordan, Briggs, Herman, Landau and others advise the vaginal operation. Herman says that vaginal treatment of any kind is only appropriate when the tumour is not larger than a child's head, and can be pressed down into the pelvis. But there are fibroids which cannot be pressed down into the pelvis, and if that is not possible the tumour cannot be removed by the vagina, and some abdominal operation must be performed.

Landau holds that the vaginal method should be employed whenever possible, and uteri containing even large tumours may be removed by Péan's vaginal *morcellement*, which, in the author's hands, has given excellent results. Abdominal hysterectomy should be the last resource.

In the technique of hysterectomy we may note a more extended use of the angiotribe. Thus Tessier[17] reports twenty-nine operations by Tuffier, with two deaths. His technique is similar to that of Doyen. The peritoneal cavity is opened anteriorly and posteriorly, the uterus bisected, and each half is pulled down. The angiotribe is then applied to the upper portion of each broad ligament from above downward, screwed tightly, and the tissue between the jaws of the instrument and the uterus is divided, after which the former is removed. The lower portions of the ligaments are treated in the same manner. In cases in which the uterus is fixed, clamps may first be used, the angiotribe being applied outside of them, after which the clamps are removed. The main point in the operation is to tighten the screw as firmly as possible while the instrument is held perfectly steady, otherwise when the tissues are friable it may tear away. It is also advisable not to grasp too much tissue at one time.

Thumin[18] reports thirty-one successful operations in which the broad ligaments were temporarily compressed with an instrument devised by him on the principle of the angiotribe of Doyen and Tuffier. All the operations were bloodless, and the convalescence was uncomplicated. The effect of the great pressure maintained for two minutes before removal of the clamp, as shown by microscopical examination, is to cause obliteration of the arteries by adhesion of the opposed endothelial surfaces, while the proximal and distal ends are plugged by thrombi—in short, the tissues are mummified but not necrosed.

The Preservation of the Ovaries in Hysterectomy.—A few writers consider that it is best to remove the ovaries as well as the uterus; thus Fritsch[19] always removes the ovaries, believing that post-operative nervous disturbances are inevitable in certain subjects, and that it is exceptional for these to be severe.

If an ovary be left there is danger of the formation of adhesions and of degeneration of the gland, on account of interference with its vascular supply—both of which results he has observed in the course of secondary operations. At the discussion of the British Medical Association, above referred to, Doran took the same view.

The great majority of recent writers advocate leaving one or both ovaries.

After-Treatment.—This important matter is thus summed up by Duncan: "There are two chief causes of death after hysterectomy—viz., heart failure and intestinal paralysis. The best way to prevent the first is to let the patient have a hypodermic injection of 3 minims of solution of **Strychnia** three times a day for a week before the opera-

tion and three or four days after it. A beef-tea enema, with ½ an ounce of brandy if necessary, should be given a few hours after the operation and repeated every six hours until the patient is taking plenty of nourishment by the mouth. Always be on your guard lest intestinal paralysis with dangerous tympanites should set in. Hysterectomy appears to cause much shock to the sympathetic system, and if you allow marked tympanites to occur your patient will probably succumb to it no matter what you do. Prevention is far better than cure and my plan is as follows : a rectal tube is passed well up the bowel every four hours after the operation, and if flatus is not passing after twenty-four hours have elapsed I order an ounce of turpentine in a pint of hot water to be thrown high up the bowel. As a rule one injection is sufficient, but if not it is repeated three or four times a day. To these injections of turpentine and to the hypodermic injections of strychnine I pin my faith. I do not believe in saline aperients by the mouth ; indeed, unless flatus be freely passed per anum, the less put into the stomach the better. After operation my patients have nothing to drink for the first twenty-four hours, except a teaspoonful of hot water every hour if they suffer much from thirst. If there be much retching or sickness a feeder of hot water in which 20 grains of bicarbonate of soda have been dissolved will often give great relief. As to food, it is a good plan to begin on the next day with three ounces of tea and milk (they usually beg for a cup of tea), then one ounce of milk with half an ounce of hot water every hour afterwards (unless sickness should set in, when everything by the mouth must be stopped and the strength be maintained by nutrient enemata). After a day or two the quantity of nourishment can be increased and it need not be given as frequently as every hour. Beef-tea or chicken broth may alternate with the milk. Everything taken by the mouth should be hot, as cold things—such as ice, soda-water, etc.—are liable to cause flatulent distension. Morphia (or opium in any form) should never be administered unless the patient be in great pain (which she seldom is) or is very restless. The bowels are moved by a soap-and-water enema on the sixth or seventh day, after which the superficial suture in the abdominal wall is removed and the patient is given solid food.

The following scheme of various operations for the removal of myomata (with or without the uterus) is appended in order that their relative scope may be borne in mind :—

A.—Vaginal Operations :—

(1,) Vaginal myomectomy.—The removal of a pedunculated myoma from the uterine cavity.

(2,) Vaginal enucleation.—The removal of one or more interstitial myomata from the substance of the uterine walls.

In both of these operations the procedure may be carried out through the dilated cervical canal; or may necessitate more or less division of the cervix or body of the uterus.

(3,) Vaginal hysterectomy.

In all three operations the part removed may be taken away whole, or in two or more portions (morcellement).

B.—Abdominal Operations:—

(1,) Abdominal myomectomy.—The removal of one or more pedunculated subserous myomata.

(1*a*,) Abdominal myomectomy may be occasionally performed for the removal of an intra-uterine tumour, the uterine cavity being opened from the abdomen.

(2,) Abdominal enucleation.—The removal of one or more interstitial myomata from the substance of the uterine walls.

(3,) Supra-vaginal amputation of the body of the uterus.

(4,) Hysterectomy (panhysterectomy).

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UTERUS Displacements of the).

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

Only two conditions require consideration under this heading, viz. (1,) Retroversion (with or without flexion); (2,) Prolapse.

Retroversion—Etiology.—The usual causes of this condition are well known and may be summed up as follows: (*a*.) A fall, strain, or over-exertion: (*b*,) Congenital conditions: (*c*.) Causes due to parturition. Owing to softening of the uterine muscle by subinvolution, with relaxation of the uterine ligaments, the uterus easily becomes retroverted, and remains so by intra-abdominal pressure. (*d*,) Pelvic inflammation, leading either to softening of the uterine muscle as in subinvolution, or to the formation of cicatricial bands which, on contracting, displace the uterus. Oliver[1] has put forth the view that displacements are brought about by physico-chemical changes in the uterine tissues, and by alterations in the mutual tissue tension between the uterus and its peritoneal envelope. He regards

the normal position of the uterus as due to a condition of "turgescence" allied to that which keeps a flower-stalk rigid; and version as due to a defect of such turgescence.

Fürst[2] dwells on the effect of bodily strain, especially in relation to alterations in intra-abdominal pressure. Premising that previous pregnancies undoubtedly furnish the chief predisposition to displacements, he points out that it is well known to every gynæcologist that retroversion of the uterus in the virgin is by no means a rare occurrence among the better classes, a fact which he thinks must be attributed to the long-continued sitting posture in a tightly laced condition that young girls assume during school hours. If such women adopt the bicycle as a means of recreation, they will find its effects invariably baneful. The author considers that swimming is the exercise most apt to counteract these injurious effects. Furthermore, Fürst has found that there is a certain immunity against retroversion in women with occupations in which the intra-abdominal pressure is lessened for continuous periods, as, for example, in floor-scrubbing. He has also noted that women in the lower walks of life, who are obliged to do their own housework, and who, while their work might be quite heavy at times, are forced to change their posture continually, are no more frequently subject to retroversion, despite all their hardships, than their better-situated sisters.

Symptoms.—The writer[3] considers that in simple retroversion the symptoms are produced in three ways: By circulatory disturbances, owing to the folding of the broad ligament; by pressure of the fundus on the rectum and the cervix on the bladder; and by reflex nervous irritation.

The folding of the broad ligament partly occludes the veins therein, but does not affect the arteries: hence congestion of the uterus and ovaries results. This congestion produces menorrhagia, and more or less dysmenorrhœa.

Pain on defæcation from pressure of the fundus leads to constipation; pressure of the cervix leads to irritability of the bladder. Pressure symptoms, however, are not marked unless the uterus is enlarged.

The reflex symptoms are many and various, including gastric, vesical, and nervous reflexes.

When retroversion is associated with endometritis, the symptoms are an exaggeration of the previous condition, with the addition of backache, feeling of pelvic weight or bearing down, and leucorrhœa due to the endometritis.

Dysmenorrhœa and sterility are the rule, and if the ovaries are

prolapsed, iliac pain and dyspareunia are nearly always present. When the condition is complicated with adhesions, dysmenorrhœa and menorrhagia are the principal uterine symptoms ; but they are often overshadowed by the more important symptoms of pelvic inflammation.

TREATMENT.—The usual treatment of ordinary cases by means of pessaries need not detain us here ; but several new operative procedures for intractable cases may be referred to. Thus Lesser[4] considers that shortening of the round ligaments by traction through the inguinal canal is the ideal anatomical plan ; but that it has disadvantages when the ligaments are thin and weak and when other complications exist. He accordingly devised the following plan : an incision is made transversely from about 2 cm. inward of the point anatomically denoting the internal abdominal ring on one side, to the same point on the other side and about 2·5 cm. above the pubes. The incision is made through the skin and fascia, down to the aponeurosis of the external oblique. The integument is then drawn upward and downward, and a short longitudinal opening is made through the linea alba and peritoneum. The uterus is then placed in position by means of the repositor, and the position of the ligaments and surroundings ascertained. A silkworm or kangaroo suture is then inserted about 0·5 cm. inward from the outer angle of the incised skin, and passed horizontally, not through the skin, but through muscle, fascia, and peritoneum ; after picking up the round ligament, it is passed outwards through the same parietal structures as before, and tied. The other round ligament is treated in the same way.

In dealing with retroflexion complicated by adhesions, the adhesions may be divided either by laparotomy or by colpotomy. According to Stocker,[5] the former is preferable in all cases where very tough adhesions or adhesions to intestines are suspected. Otherwise colpotomy is applicable and should be chosen. Many surgeons advocate anterior colpotomy. Stocker prefers posterior, because (1,) Under certain conditions, such as when an ovary is tightly adherent to the bottom of Douglas's pouch, anterior colpotomy would fail in its object ; (2,) The separation of adhesions is easier, because the posterior incision leads directly to their site. The only difficulty in the operation is when Douglas's pouch is partly atrophied. The uterus once freed and in its normal position, steps must be taken to keep it there. (*a.*) If laparotomy has been performed, this can be secured either by ventrofixation or by shortening the round ligaments from the abdominal side. The author has always used the first method, but

considers the second rational. (*b*,) Those who perform anterior colpotomy for the separation of the adhesions employ vaginal fixation, fastening the uterus to the anterior wall of the vagina or to the bladder. Many cases of bad complications during subsequent pregnancies have been reported after this operation. (*c*,) Stocker strongly recommends that Alexander's operation of shortening the round ligaments should be performed after posterior colpotomy and separation of adhesions, since he knows of no cases of disturbance of subsequent labour, though he has done one hundred and two Alexander's operations, and has performed the combined operation for adherent retroflexion five times, with excellent after-results.

Goldspohn,[6] like Lesser, considers that Alexander's operation for the shortening of the round ligaments is the best operative procedure for retroversion on anatomical grounds, and also for the following clinical reasons : the mortality is practically nil, it favours conception, does not interfere with gestation or labour, and is rarely followed by recurrence of the displacement. The requirements for success are : (1,) A complete and exact diagnosis as to the condition of the uterus and appendages : (2,) Mobility of the uterus and appendages. Goldspohn believes that the list of cases that are ineligible on account of adhesions can be largely reduced by bi-manual massage, *redressement forcé* under narcosis (method of B. S. Schultze), liberating the organs by a preliminary posterior colpotomy, or, best of all, by the plan he has introduced, of introducing one or, if need be, two fingers through the dilated abdominal ring of one or both sides. By this means he claims that adhesions can be separated from the posterior surface of the uterus, the appendages can be examined, and salpingostomy, resection of the ovary, or removal of both ovary and tube can be effected.

Richelot,[7] in reviewing the various operative procedures, thinks that the dangers of abdominal hysteropexy have been magnified, and that if the uterus be secured by its anterior surface, and not by the fundus, no trouble will follow. Vaginal hysteropexy places the uterus in a more normal position, but one which is attended by great danger during pregnancy and labour. Alexander's operation ought to have a considerably less hurtful effect upon future pregnancies, but it is an operation in which we work more or less in the dark ; moreover, the ligaments may subsequently lengthen, and displacement recur. He prefers abdominal hysteropexy as performed by Doléris, in which, after opening the abdomen, the round ligaments are seized 3 to 4 cm. from the uterine cornua and fixed to the lower angle of the wound.

After-results of Operations for Retroversion and Flexion. —

Villeneuve[8] considers that hysteropexy prevents the regular development of the uterus during pregnancy, and favours mal-presentations and the vicious insertion of the placenta. Anterior vaginal fixation causes dragging pains, haemorrhages during pregnancy, and frequent abortion.

Halbau[9] gives a full report on the operations undertaken for the correction of backward displacements of the womb during the years 1892-1898, among the four thousand patients with retroversion or retroflexion seen during that time at Schauta's clinic. In the one hundred and forty-seven cases operated upon, it was only in eighty-eight that the displacement was the sole cause of intervention. The various methods of operation adopted fall under two heads, (1,) Such as fixed the uterus to neighbouring organs ; and (2,) Such as shortened the round ligaments.

As regards permanent results it was found that even when the position was properly corrected, the troubles were not cured in more than from 80 to 86 per cent. of the cases, perhaps because various symptoms had been attributed to a retroflexion that were really due to other causes ; nevertheless, subjective and objective improvement generally went together. As regards the objective condition ventrofixation gave the best results ; next to it, Dührssen's intraperitoneal vaginofixation, and then vaginal shortening of the round ligaments. Except in complicated retroversions, vaginal operation was always preferred to abdominal. Vaginofixation was not employed before the climacteric.

Lapthorn Smith[10] concludes that as far as curing retrodisplacement (either retroflexion or retroversion, or anteflexion with retroversion) is concerned, ventrofixation with two buried silk sutures through the peritoneum and fascia give the most reliable results. Ventrofixation should be reserved for cases in which there are adhesions or diseased and adherent tubes to be removed. When it is expected that pregnancy may follow, some other operation should be chosen, as when the uterus is firmly attached to the abdominal wall and pregnancy follows, trouble of some kind, either pain, miscarriage, or difficult labour requiring obstetrical operations, takes place in about 30 per cent. of the cases, namely, thirty-six in one hundred and forty-eight ; 75 per cent. went on to normal labour, though in half these cases dragging pains were experienced. Simple suspension of the uterus to the parietal peritoneum sometimes fails, but has the advantage of entailing no inconvenience during future pregnancy and labour. The uterus, therefore, should be suspended rather than fixed to the abdominal wall in all cases in which any part of the ovary is allowed

to remain. Intra-abdominal shortening of the round ligaments is also a good operation when pregnancy is probable afterwards, as the ligaments lengthen during gestation.

Goldspohn (*op. cit.*) has collected some after-results of Alexander's operation. Thus, Stocker observed twenty-one married women out of a total number of thirty-seven operated upon by the Alexander method. Ten of the twenty-one married patients gave birth to thirteen children at term without unusual complications; and only two of the ten afterward had a recurrence of displacement. A. L. Smith, in forty-two total cases (married and unmarried), had three primary failures and three normal pregnancies. Küstner, in seventy-one total cases, records five pregnancies and no recurrences. Edebohls reports twelve pregnancies in one hundred and ten cases after the Alexander operation. Two of these aborted, and one was lost from observation at the seventh month of gestation. Nine terminated safely in normal delivery. And F. W. Johnson has collected forty-five cases in which pregnancy took place after the Alexander operation, with only one certain relapse of displacement. There is no recorded case of difficulty in labour due to this operation, and all that is noted during gestation is slight traction pain in the region of the round ligaments during the last months of pregnancy.

Roncaglia[11] gives the results of fifty-eight cases of Alexander's operation. He found that in all save one the uterus was normally anteverted after periods varying from six months to nine years, and that the women were able to do hard work. Further, eight normal pregnancies and labours had occurred in six of the women; one had had a premature labour of a macerated fœtus, two had aborted, and three others were now pregnant, two, three-and-a-half, and five months respectively.

Prolapse of the Uterus.—Staedler[12] thinks that it is unscientific to endeavour to cure prolapsus by amputating the cervix uteri and performing anterior and posterior colporrhaphy. Removal of the cervix not only does not reduce the size of the uterus, but may result in a serious complication should the patient subsequently become pregnant. Removal of mucous membrane and fibro-muscular tissue from the vaginal walls destroys their natural elasticity, and the cicatrices which remain become over-stretched during labour, so that the condition is the same as before operation. Shortening of the round ligaments, combined with Tait's method of perineorrhaphy, meets all the indications more satisfactorily, especially in women at the child-bearing age.

Other authorities, however, consider that Alexander's operation is not so applicable to prolapse as it is to backward displacements; for prolapse they prefer ventro-fixation.

Inglis Parsons[13] gives the later histories of the patients on whom he operated by the plan of injections of **Quinine** into the broad ligaments. (See "Medical Annual" for 1899, p. 585). Out of the eighteen patients, the results were quite satisfactory in sixteen; at the time of writing, one was five months pregnant.

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UTERUS (Inversion of the). *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

Acute inversion seldom presents any serious difficulties in the way of reduction. Three recent cases have been reported, one by Don,[1] in which manipulation and taxis sufficed. The plan adopted was as follows:—

The left hand was passed into the vagina, and pressure on the centre of the fundus made in the direction of the axis of the pelvis, but being quite ineffectual and causing much pain, it had to be discontinued.

The pressure, however, caused a slight depression or dimpling in the lower portion of the mass, recognising which he continued to apply it to this portion by means of the first and second fingers, and finding that the pit gradually deepened, used more force, until the fundus gradually resumed its natural state; he was then able to insert all the fingers into the fundus, and placing the thumb outside the double wall of uterus, "fed in," as it were, the surrounding inverted portion.

A very few minutes of this manipulation reduced the bulk of the uterus, and it suddenly resumed its normal position, instantly relieving the severe pain.

Chronic inversion will sometimes yield to manipulation or to continuously applied pressure, as by Aveling's repositor. Hellier[2] succeeded with this instrument in a case in which the patient was delivered on October 4, 1898, and was admitted into the hospital at Leeds on April 11, 1899. Taxis was ineffectually tried, and on April 25 Aveling's repositor was applied. The cup employed had

a diameter of one and a half inches. On April 27, after fifty-one hours of application, the fundus was found to have gone up. Ether had to be given to remove the repositor, the cup being tightly gripped by the cervix. After a slight rise of temperature the patient made a good recovery. The accident of the imprisoning of the cup of the repositor within the reduced uterus is one that has to be guarded against. In our work on "Diseases of Women,"[3] it is advised that "as soon as the fundus is reduced to the level of the internal os, it is desirable to change the cup of the repositor for a smaller one, for when reduction is complete a large cup is imprisoned in the uterine cavity, and is sometimes so firmly held as to cause difficulty and anxiety in its extraction."

For irreducible inversion various operative procedures have been devised. The extreme measure of removal of the uterus has been practised, but this has been largely superseded by what have been described as "conservative" procedures. The simplest of these is posterior colpotomy, as in a case recorded by Struthers.[4]

Küstner's treatment of chronic inversion of the uterus (opening the posterior fornix and division of the posterior wall of the uterus) has, according to Spinelli,[5] the disadvantage that the posterior wall of the uterus, already hypertrophic before the operation, becomes still thicker after it. Kehrer's method (splitting the anterior wall) simplifies the re-inversion but impedes reposition. In a woman aged twenty-seven, with inversion of the uterus for two years after abortion, Spinelli therefore combined Dührssen's colpo-cœliotomy and vaginal fixation with Kehrer's anterior hysterotomy. The case did well.

Westermark[6] has described a "new operation" for inversion, which appears to be identical with Küstner's. The case was one of irreducible inversion, in which he opened the posterior fornix, inserted one finger into the ring from above, and, while steadying the uterus in this way, incised the posterior wall. By compressing the anterior wall with the thumb while the edges of the wound were pressed inward, the inversion was easily reduced. The uterus was then brought through the vaginal opening, and the wound was sutured with catgut, after which the organ was replaced within the peritoneal cavity, and the wound in the posterior fornix was sutured. The patient made a good recovery.

Two operations with more claim to originality are those of Barton Cooke Hirst[7] and Browne,[8] though the latter may be looked on as a modification of Küstner's. Hirst's operation is that of cutting the cervical muscle in two, which he says can be done in a few seconds, without opening the peritoneal cavity, without danger, and with the result of immediately removing the only obstacle to replacement.

The cervix is divided in the median line posteriorly, the incision being carried higher on the internal than on the external surface. In the case reported, after this was done comparatively light pressure re-inverted the uterus.

Browne's experience of inversion comprises six cases, two acute (reduced by taxis), three due to intra-uterine fibroids (reduced by taxis after enucleation of the fibroids), and one chronic. The last could not be reduced either by taxis or pressure, and he accordingly operated in the following manner :—

The inverted fundus was drawn outside the vulva with strong vulsellum forceps, the openings of both Fallopian tubes were plainly visible ; an incision one inch and a-half in length was made through the posterior portion of the uterus (avoiding the Fallopian tubes and larger vessels at the side of the uterus). Through this incision Sims' large dilator was passed up into the cervix and expanded to the fullest extent ; the rigid tissues of the cervix were felt to relax ; then, upon withdrawing this dilator, Nos. 2 and 3 of Hanks' hard-rubber dilators were passed through the cervix. The incision in the uterus was sewn up with carbolised silkworm-gut, and with slight manipulation the fundus was easily replaced through the now passable constriction. She made an uneventful recovery. In the discussion on this paper, Drs. Currier and Coe expressed a preference for Thomas's operation, while Howard Kelly and Charles Noble preferred Küstner's operation ; other speakers preferred taxis, but did not say what they would do in chronic cases if taxis failed to effect reduction.

Inversion due to a uterine fibroid may usually be reduced after removal of the tumour, which is generally of the sub-mucous or polypoid type. This was the plan adopted in Browne's three cases already referred to, and also in a case reported by Herman and Durno.[9] This was a case in which a fibroid weighing two and a quarter pounds, growing from the fundus, had descended into the vagina, and in doing so had caused inversion of the uterus. After the removal of the tumour by peeling it off the inverted uterus, the inversion was reduced by taxis on the fundus with traction on the cervix.

In another case Edgar Alexander (Dresden)[10] amputated the uterus.

REFERENCES. — [1] "Brit. Gyn. Jour.," Aug., 1899 ; [2] "Lancet," July 15, 1899 ; [3] Sutton and Giles, "Dis. of Wom.," 2nd ed., p. 150 ; [4] "Scott. Med. and Surg. Jour.," Aug., 1899 ; [5] "Cent. f. Gyn.," No. 19, 1899 ; [6] "Amer. Med. and Surg. Bull.," June. 1899 (Abst.); [7] "Amer. Jour. of Obst.," Jan., 1900 ; [8] "Amer. Gyn. and Obst. Jour.," Aug., 1899 ; [9] "Brit. Med. Jour.," Feb. 25, 1899 ; [10] "Arch. f. Gyn.," vol. lviii., p. 439.

VAGINA Diseases of. (See also "Vulva.")

Arthur E. Giles, M.D., B.Sc., F.R.C.S.

Atresia Vaginæ.—Cotterill[1] describes, under the heading of "Complete Atresia Vaginæ," a case which comes properly under the description of absence of the vagina. The patient had been married two years, and although the history and the examination of the patient showed that the uterus and ovaries were functionless, and any operation would only be for purposes of cohabitation and not of maternity, the patient and her husband expressed a very strong desire to have the operation done, as the patient was suffering a great deal from the mental distress commonly met with in such circumstances, and had been losing flesh rapidly. For the details of the operation, which answered its purpose very satisfactorily, we must refer the reader to Cotterill's paper.

Leucorrhœa.—Landau[2] gives the results of his experiments with cultures of the yeast plant in forty cases of leucorrhœa, especially those due to a chronic gonorrhœa. In more than half the cases all traces of the leucorrhœa disappeared after one or two applications, even where it had existed in spite of other treatment for months or even years. In another group of cases the leucorrhœa disappeared, but eventually returned. In a few cases there was considerable improvement, and in a few there was none. Landau uses a culture of yeast in some fermentable fluid, and injects some 10 to 20 c.cm. into the vagina. A tampon is introduced and allowed to remain for twenty-four hours. No unpleasant effects were noticed, except in two patients, in whom it produced a sensation of itching. This was overcome by a soda injection. The injection of the yeast was repeated in two or three days, the treatment lasting from one to several weeks. The author has never injected it into the cervix, and still less into the uterus. He would explain the action of the yeast by (1.) The mechanical expulsion of the microbes producing the leucorrhœa, due to the overgrowth of the yeast; (2,) The depriving these microbes of the necessary nutrient substances; or (3,) The action of the products of the yeast plant. Landau thinks that yeast injections might be useful in some cases of cystitis with alkaline fermentation of the urine.

Cystocele.—Not much in the direction of new procedures has been done since our last report on this subject (see "Med. Ann." for 1899, p. 222.) For advanced cases, however, Laroyenne[3] has devised a new operation, the principle of which is that the uterus is fixed to the abdominal wall, as is done in abdominal hysteropexy; whilst in addition a couple of sutures are passed through the serous and muscular coats of the

postero-superior aspects of the bladder and through the anterior wall of the uterus, and two more sutures through the bladder and the peritoneal and fascial layers of the abdominal wall. While passing the bladder sutures the operator's finger is introduced into the bladder through the dilated urethra to serve as a guide.

Inoperable Cancer of the Vagina.—Coston [4] reports a case of extensive cancer of the vagina, in which, as a palliative measure, he employed the local use of a 3 per cent. solution of **Methyl Blue** in equal parts of alcohol and water. He made an application of this solution every second day, swabbing it over the entire diseased area. The hæmorrhage began to decrease in quantity from the first application, and soon the infiltrated area commenced to grow softer, and the tissues became less fragile and permitted an ocular view of the os uteri. In the meantime he was giving her tonics and alteratives.

When she left for home two months later, the hæmorrhage had almost entirely ceased. The ulcerated surface had healed—cicatrised—except in the left fornix; in that place there was a small area that refused to heal, and he believed this ulcerated spot was continuous with the infiltration of the broad ligament.

Four months after beginning treatment the patient was in very fair condition; sometimes she would go an entire week without a stain, and then there would be a slight hæmorrhage. The thickening in the broad ligament was, of course, increasing. She was, however, a few pounds heavier than when treatment was first begun.

He makes no claim for methyl blue as a curative agent for cancer, but considers that in inoperable cases it is of great use in checking its local spreading, in improving the general condition of the patient, and in adding to her comfort.

REFERENCES.—[1] "Brit. Med. Jour.," Apr. 7, 1900; [2] "Deut. Med. Woch.," Mar. 16, 1899 (Abst. in "Brit. Med. Jour.," Apr. 22, 1899); [3] "Gaz. des Hôp.," Sept. 5, 1899; [4] "Therap. Gaz.," Apr. 15, 1900.

VARICELLA GANGRÆNOSA. *T. Colcott Fox, M.B.*

Cases have been described in this country in which the eruption of varicella has undergone gangrænous changes. Similar effects have been observed to complicate other inflammatory eruptions so that the wider term, Dermatitis Gangrænosa, was coined. Hitschmann and Kreibich seek to establish a causal relationship between the bacillus pyocyaneus and ecthyma gangrænosum, and these observations go to confirm the conclusions of other workers.

REFERENCE.—[1] "Arch. f. Derm. u. Syph.," Band 1, Heft i, p. 81.

VARICOCELE. *Priestley Leech, M.D., F.R.C.S.*

Naruth[1] says that all his cases of varicocele were associated with considerable enlargement of the inguinal canal. He has devised a new operation for this condition. A 4-inch incision is made as in Bassini's operation and the veins are resected within the canal which is then closed by Bassini's method.

The advantages are: The circulation in the veins is more surely interrupted; the spermatic artery is not so readily injured; the enlarged inguinal canal (which he looks on as the cause of the condition) is removed, and the skin is more easily and surely sterilised than that of the scrotum.

REFERENCE.—[1] "Wien. klin. Woch.," Jan. 25, 1900.

VERMES.

Synopsis.—(Vol. 1900, p. 88). Large rectal Enemata, in conjunction with remedies given per os

VISION. *F. W. Edridge-Green, M.D., F.R.C.S.*

The Perception of Light and Colour.—The eye has often been compared to a camera, but it is really a complete photographic apparatus.

Light acting upon the retina liberates the visual purple from the rods and a photograph is formed, the cones and optic nerve fibres conveying the impression to the brain. Kühne stated that the visual purple cannot be essential to vision as it is absent from the cones, and only cones are to be found in the fovea centralis, the region of most distinct vision. This fact, however, furnished me with a ready means of testing the truth of my theory. I have made numerous experiments which prove that unless light falls also on a portion of the retina containing rods, it may fall on the fovea centralis without producing any sensation.[1] The reader may convince himself of this by a very simple experiment. Fasten a piece of black velvet, about three feet square, on a door, and in the centre of the velvet put a pin so that the head is directed towards you. If the source of light be behind the observer the pin will be brightly illuminated, but on looking at it and keeping the eyes quite still the pin will disappear, the visual substance diffused into the fovea centralis being used up and not renewed. When viewed by indirect vision it is impossible to make it disappear in this way. Single isolated stars (when not too bright) may be made to disappear in a similar manner.

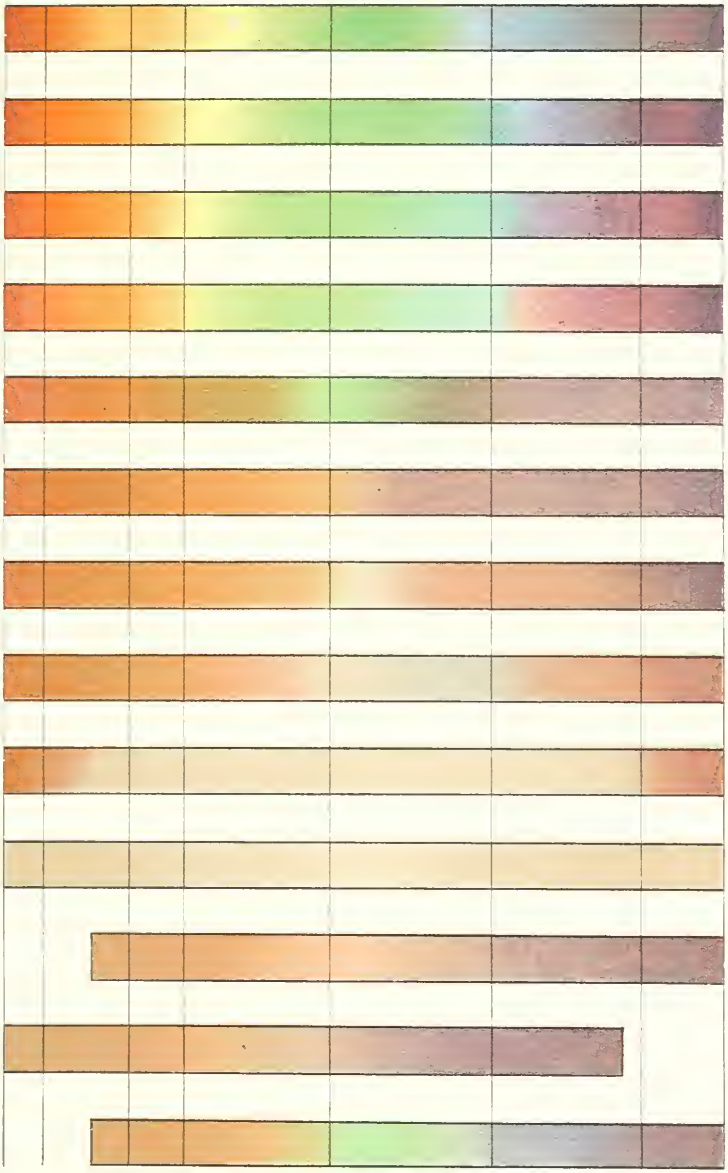
It is not generally known (though the fact is mentioned by Helmholtz and stated by him to be quite unexplainable) that a perceptible interval elapses before we see with our yellow spots after opening our

eyes. If the reader, in a dimly-lighted room, direct one eye towards a uniformly illuminated surface, on opening the eye the region corresponding to the yellow spot will be seen as an oval black patch, and light appears to invade this patch from without inwards. The fovea centralis is the last point to convey a light sensation.

The view, as stated, occurred to me when I had not one twentieth part of the evidence in favour of it which I have now. But during the last ten years I have collected evidence that proves not only that there is a visual substance, but that that substance is purple, namely the complementary of pure green. It is probably only seen as purple when in excess. Under certain conditions a purple after-image can be obtained after white light and every spectral colour. If we press one of our eyes in a dark room a purple light appears. It will be noticed that the visual purple is in every way suitable for the visual substance. It gives a continuous spectrum and it is most sensitive to those rays which produce most effect on the retina. It is easy to suppose that light might liberate the visual substance just as heat melts an ointment, but we have evidence that the cones themselves help to do so. Engelmann and van Genderen Stort have shown that there is a shortening of the inner segments of the cones under light, but this cannot convey any light sensation to the brain, as the same action has been found to take place when the light falls on another part of the body. This action would cause a vacuum. In my experiments in which I have caused lights to apparently disappear, I find that the experiment succeeds best if only one eye be used and the greatest care be taken that no light falls on the face or any other part of the body. I believe that shortening of the spectrum is due to some defect in this visual substance, as there is light as well as colour loss, which is not the case with colour-blindness due to defective psycho-physical perception.

The visual substance being decomposed by light sets up by means of chemical, mechanical, electrical, or some other physical action, impulses which are conveyed to the brain through the cones and optic nerve fibres, the cones being the terminations of the perceptive fibres in the retina. The whole impression being brought to the centre of memory, different portions of the impression (colour, form, size, luminosity, etc.) are conveyed to the mind through definite perceptive centres. In the case of colour, this perceptive centre is only able to distinguish six definite points of difference (colour) in the spectrum which really presents millions (see *Plate XIII, Fig.* 2). We, therefore, for the normal sighted have a hexachromic theory of colour vision which is independent of light and shade. A hexachromic theory

PLATE XIII.



Colour Blindness.

MEDICAL ANNUAL, 1901.

Edridge-Green, del.

SCOTT & FERGUSON, EDIN.

will obviously explain all that can be explained by a trichromic theory. It also agrees with the fact that both blue and violet have been demonstrated to be primary. I may say that I totally disagree with the opinion that normal colour vision is trichromic, in the sense used by the physicists, that is, that there are three fundamental sensations which are capable of acting independently of each other. Not only is such a view unnecessary, but it is more complicated and quite inconsistent with facts. It is only necessary to assume that the nerve impulses differ in character, just as the physical light waves differ in wave length. The same of course applies to hearing, in which the nerve impulses caused by the bass notes must differ from those caused by the treble. I am of opinion that the curves and equations which have been constructed to prove that vision is trichromic are mathematically incorrect. I raised this point in a paper which was read before the Royal Society on June 21, 1900. Equal stimulation of the three sets of fibres is supposed to cause the sensation of white light. Red and green when mixed make yellow. Violet and green when mixed make blue. But yellow and blue when mixed make white, which makes one portion of green too many, thus: R + G = Y, and G + V = B, but Y + B = white; therefore, R + G + G + V should equal white, but R + G + V = white. The co-efficient representing intensity of G is the same in both equations, as a simple experiment will show. If, when spectral red, green, and violet have been mixed in such proportions as to make white, the violet be shut off, the resultant will be yellow.

The degrees and varieties of colour-blindness are perfectly explained by the theory of psychophysical perception. Assuming that the perceptive centre is smaller, fewer points of difference are seen (see *Figs.* 3 to 10). The phenomena of contrast are explained on the view that colour being a point of difference this becomes more marked on comparison. If we contrast a yellow with a greenish-yellow, the yellow inclines to orange and the greenish-yellow to yellowish-green. This could not be explained by assuming that the colours differ by the addition of the complementary to each, as the complementary of yellow is blue and this mixed with yellow would make white instead of orange-yellow.

Cases of colour-blindness may be divided into two classes, which are quite separate and distinct from each other, though both may be present in the same person. In the first class there is light as well as colour loss. In the second class the perception of light is the same or better than in the normal sighted, but there is a defect in the perception of colour. In the first class certain rays are either not perceived at

all or very imperfectly. Both these classes are represented by analogous conditions in the perception of sounds. The first class of the colour-blind is represented by those who are unable to hear very high or very low notes. The waves of light at the ends of the series are those which are not perceived. The second class of the colour-blind are represented by those who possess, what is commonly called, a defective musical ear. It is with this second class that we are specially concerned in this paper. Colour-blind individuals belonging to this class can be arranged in a series. At one end of this series are the normal sighted and at the other the totally colour-blind. It is evident that the degree of colour-blindness which just precedes the totally colour-blind, will give us an idea of the perception of colour when the colour sense was first developed. I had an exceptional opportunity of studying a case of this kind in a patient who was colour-blind with one eye (see *Fig.* 9). It is an interesting fact that the colour-blind eye was much the best of the two, and he could see fine lines in the spectrum with this eye which were not visible to the other. On examining him with the spectroscope I found that he saw the two ends of the spectrum tinged with colour and the remainder gray. Neither the red nor the violet appeared of the nature of a primary colour, but gave the impression that they were largely diluted with gray.

It will be seen that the colour perception of his right eye was limited to two colours, namely, those which present the greatest physical contrast to each other; red being produced by the largest waves and violet by the smallest. This is exactly what we should expect, it being most probable that those physical stimuli, which were most dissimilar, would first be perceived as different. The examination with the spectroscope gave a key to his colour perception. Tested with a lantern, at a distance of fifteen feet, he recognised the red glass at once. Tested with pure green, blue-green, blue, yellow, and various depths of neutral glass, he declared uniformly that they had no colour, but he remarked that I had not shown him a violet glass.

Let us now consider the further evolution of the colour sense. As the colour sense developed it would not be necessary that the rays should be so far apart before a difference was seen, and so the gray band would gradually diminish until it entirely disappeared and the two colours met in the centre of the spectrum (see *Figs.* 8, 7, and 6). A third colour, green, then appeared at the central point (*Fig.* 5). Then yellow appeared, making four colours, then blue making five, and finally orange making the normal six (see *Figs.* 4, 3, and 2). These predictions are borne out in the minutest detail by the facts of

colour-blindness, and I have classified the colour-blind in accordance with the number of colours which they see in the spectrum.* If the normal sighted be designated hexachromic, those who see five colours may be called pentachromic, those who see four tetrachromic, those who see three trichromic, those who see two dichromic, and the totally colour-blind monochromic. An examination with the spectrum gives a key to the colour perception of any person. It will be noticed that the colours appear in a definite order and exactly as we should theoretically expect, that is, at the points of greatest difference. It is obvious that the three points of greatest difference are the centre and ends of the spectrum. Where will the fourth point of difference be situated? If the units of the physical series differed from each other in a proportional manner, the fourth and fifth points of difference would appear at the same time and be situated at points midway between the centre and ends of the series. The units of light do not, however, differ from each other in a proportional manner, therefore, the fourth point of difference will appear before the fifth. The waves of light at the red end of the spectrum are larger than those at the violet end, and therefore the fourth point of difference will appear at a point midway between the red and centre of the green, namely, the yellow. An example with smaller numbers will show why the fourth point of difference should appear on the red side of green. Let us suppose that we have a series of vibrating members, the vibrations being from 5 per second for the lowest member to 105 for the highest member. There will be much more difference between the first and second members of the series than between the last member and the one just before it. In the first case there will be a difference of $\frac{1}{5}$, in the second $\frac{1}{104}$, a very much smaller fraction. The fifth point of difference will appear midway between the violet and the centre of the green. The sixth point of difference will appear on the red side of the fourth point. There will then be two points of difference between the red and the centre of the green, namely, orange and yellow. It is evident that when orange is seen, the fourth point of difference, yellow, will appear to have moved more towards the green, the fourth point of difference now being a combination of the two, namely, orange-yellow. This can be seen to take place if a spectroscope be arranged so that no orange can be seen. A spectrum of this kind can be obtained with a fine slit: on slightly widening the slit so that

* "Colour Blindness and Colour Perception," International Scientific Series.

more light is admitted the orange will be seen, and the yellow will appear to change its position and move towards the green. The seventh point of difference will appear between the green and the violet; that is to say, there will be two points of difference, or colours seen, between the green and the violet instead of one. It is not necessary to consider the extension of the series further, as I have not met with a person who could see more than seven colours in the spectrum. The series could be extended *ad infinitum* and shows us how evolution will proceed, the extra point of difference being put first on the red side of the green, then on the violet side. Viewed in the light of the above facts much that was unexplainable before becomes quite intelligible. One writer declares that four is the number of colours seen in the spectrum and accuses Newton of a lurking disposition to mysticism in choosing seven, another says that five is the correct number, another six, another three, and another seven, declaring that Newton was right. All are wrong and all are right. It is curious to note that those possessing a lower degree of perception often invent colour terms which are not intelligible to the normal sighted. Thus, those possessing trichromic vision often talk about red-green when they mean yellow, and violet-green when they mean blue, and declare that these terms are more appropriate. I will now point out the influence of a shortened spectrum upon the perception of colours. As we should theoretically expect, all the centres of the colours are moved towards the unshortened side (see *Figs.* 11, 12, and 13). This in dichromic cases has led to the division into the so-called red- and green-blind. It is obvious that when the red end of the spectrum is shortened, the centre of the green will no longer be the centre of the spectrum, and that the neutral point will be proportionately nearer the violet end.

Those who see seven colours in the spectrum have an exceptionally good colour-perception (see *Fig.* 1). They can match colours with greater ease, and have a better memory for colours than the normal sighted. They can also recognise differences of colour which are not perceptible to the normal sighted.

In testing for those employments on sea and land, which require a good colour-perception, I class those who are pentachromic and tetrachromic with the normal sighted. I may mention that the ordinary tests, which are employed by railway companies and the mercantile marine, allow those who are trichromic to pass as well, but this is not right, as they are always in difficulty over yellow, though they distinguish red from green easily enough.

It should be noted that nearly all the tests for colour-blindness in

use at the present time, are based upon some theory, and fail exactly where the theory fails. The facts of colour-blindness should not be made to conform to the theory, but the theory to the facts. All the figures in the *Plate* are drawn from actual cases of colour-blindness. It is obvious that a person having hexachromic vision, but considerable shortening of the red end of the spectrum, would be quite unsuitable as an engine driver, because he would have great difficulty in seeing a red light at all and yet be able to match a green wool with other green wools with ease. A man may not be able to hear the low notes of an organ and yet be a musician. Even those specialists who had previously supported Holmgren's test most strongly are now recognising that it is inefficient.[2] [3] A properly constructed lantern test is a necessity. Quantitative tests which assume that colour-blindness is a condition of short-sightedness for one or more colours are quite useless. I have examined colour-blind persons who could read letters of all colours on a black ground at a much greater distance than the normal-sighted. This condition is common amongst savages, who have a defective colour-perception but an extremely good form and light perception. A colour-blind person may see a coloured light long before it is visible to the normal-sighted, but miscall it in the same way as he does when he is close to it. When there is shortening of the red end of the spectrum then red is not visible at a distance, but this is quite a distinct defect.

Many physicists have made experiments on the subject of colour vision, a favourite method being by measuring the luminosity of a colour. I have pointed out the defects in this method of endeavouring to ascertain the colour-perception of an individual.[4] If the theory as to a photo-chemical substance be admitted, then the action of light on this substance may produce an excessive reaction with one person and very little with another; the apparent luminosity would be much greater in the first case. The secretion of fresh photo-chemical substance may be quicker in one person than another. We know that the visual purple may be bleached by monochromatic as well as by mixed light. If we suppose the visual substance of the eye to be decomposed in the same manner, it would be possible to understand that we might get similar curves of luminosity by different colours, though the visual impulses sent to the brain might in each case be different. If there be, and all recent research points to the fact that there are, different centres in the brain for the perception of luminosity and colour, it is obvious that ascertaining the luminosity of a colour will not give us any information concerning that colour, because the two are absolutely and totally

distinct. In order to make my meaning clearer, I will make a comparison with the organ of hearing. The perception of pitch is in every respect analogous to the perception of colour, and yet no one would dream of endeavouring to obtain any information concerning the pitch of a note by observations on the intensity with which it is struck. In conclusion, I will point out that we must always be careful in examining a person by physical methods that we do not obtain results which are only physical, chemical, and electrical phenomena. When the phenomena are psychical they cannot be measured by the balance and the rule, but must be gained by direct evidence from the mind itself.[5]

REFERENCES.—[1] "Ophth. Rev.," Oct., 1900; [2] "Brit. Med. Jour.," March 17, 1900; [3] "Lancet," May 26, 1900; [4] Ibid., Aug. 4, 1900; [5] "Jour. of Mental Sci.," Oct., 1900.

VISION. *F. Richardson Cross, M.B., F.R.C.S.*

Theories and Experiments bearing on the Act of Accommodation of the Eye.—Helmholtz demonstrated that the essential change in the crystalline lens, by which accommodation is affected, is an increase in the convexity of its anterior surface. The experiments were made in the area of the undilated pupil, but he assumed that the increased sphericity observed involved the whole anterior surface of the lens. Thomas Young had earlier shown that the alteration in the curve of the lens took place mainly at the pupil, and that its more peripheral portions were less affected. The theory as to causation of this increase of curve that has been almost universally accepted is that the lens usually kept tense, with its anterior surface somewhat flattened, by means of the suspensory ligament, is accommodated for near objects by contraction of the ciliary muscle which, by pulling forward the choroid and the ciliary processes, *slackens the suspensory ligament*, and allows the anterior surface of the lens to bulge forwards by virtue of its elasticity and so to become more convex.

Tscherning[1] has recently confirmed Young's observations that the lens surface during accommodation becomes hyperbolic rather than spherical, and states that the most peripheral portions of the lens show a diminution rather than an increase in curve. He believes, moreover, that the increased convexity of the pupillary portion of the lens *is due to increased tension of the zonula* instead of to its relaxation. He explains how contraction of the ciliary muscle by a somewhat complicated action, not elsewhere described, produces this result. The muscle is said to consist of a superficial and a deeper portion. Of the deeper portion the more posterior fibres are inserted into the choroid, which they pull forward so as to increase the tension on the vitreous

body and to keep forward the lens or even to advance it ; the anterior fibres are inserted into the zonula, they tend to draw this membrane backwards against the lens, which is flattened at the periphery, while the central (pupillary) portion is squeezed forward and is rendered more convex. Tscherning attributes the change in the anterior surface to a displacement of the lens as a whole ; according as the anterior or the posterior fibres of the ciliary muscle are acting the more energetically the lens will tend to be carried backward or forward.

More recent experiments by C. Hess[2] lead him to support the older view, that accommodation is associated with relaxation of the suspensory ligament and does not depend on its increased tension.

Priestley Smith[3] has taken much interest in the question of the changes that occur during accommodation, and has drawn special attention to it. He admits that the change on the anterior lens surface produced by accommodation is mainly at its centre and that the altered curve is hyperbolic rather than spherical. He gives the fullest recognition to Tscherning's ingenuity and skill in demonstrating the changes that occur in the lens, but considers that these changes may be brought about at the anterior lens surface by slackening of the zonula, and need not depend for their causation on the zonula being tightened. By means of a model he shows that the changes in the crystalline lens which Tscherning has demonstrated to take place during accommodation may be caused by loosening of the lens, as was suggested by Helmholtz. Despite our increased knowledge as to what occurs in the altered shape of the lens during accommodation, the actual details of the part played in this act by the ciliary muscle and by the suspensory ligament require apparently still further elucidation before we can consider the problem definitely solved.

REFERENCES.—[1] Intern. Ophth. Cong., Edin., 1894 ; [2] "Von Graefe's Archiv.," xlii, 288, 1896 ; [3] "Trans. Ophthal. Soc.," vol. xix, 249 ; "Oph. Rev.," vol. xvi, 32.

VULVA (Disease of). *Arthur E. Giles, M.D., B.Sc., F.R.C.S.*

Kraurosis Vulvæ. — The symptoms, pathological anatomy and treatment of this rare condition are admirably described by Boldt and Williams.[1] The symptoms are no doubt familiar to most of our readers, but probably the same cannot be said of the pathological anatomy, and we are glad of the opportunity of reproducing here the substance of Boldt and Williams' excellent paper, together with some of their illustrations.

Symptoms.—Clinically, the picture of this disease is most striking. The first symptoms noticed are usually those characteristic of pruritus, which consist of an intense and more or less progressive itching and burning of the vulva. In some cases the affected tissue is excessively hyperplastic, and dyspareunia develops early. The skin is frequently discoloured, and small red spots appear on the surface. Some time after these symptoms are noticed a peculiar shrinking of the superficial tissue of the vulva begins to take place. Discoloured spots appear which are hyperæsthetic. The skin becomes dry and whitened, and often covered with a rough and thick epidermis.

The disease may be unilateral or circumscribed, but usually the tissues of the labia majora, the nymphæ, the area about the clitoris and urinary meatus all become more or less involved, while the skin about the anus is frequently affected. As the disease advances the small labia gradually disappear, fusing with the labia majora, and the skin becomes shiny and drawn smoothly over the shrunken clitoris, which has apparently retracted behind the skin, and is now only indicated by a small depression instead of a prominence. Underlying vessels are frequently seen through the transparent epidermis, and cracks appear on the dry surface which extend often into the corium. A sensation of drawing and shrinking of the vulva is usually experienced, and the vaginal orifice becomes gradually narrower and more and more contracted, until frequently the little finger can scarcely be introduced, and all sexual intercourse becomes a physical impossibility. When this condition has been reached the pathological process is arrested, the subjective sensation of shrinking passes away, and the symptoms of pruritus, usually prominent only in the earlier stages of the disease, are no longer experienced. But the shrunken and contracted vaginal orifice still persists, and is never spontaneously restored.

Pathological Anatomy.—A general survey of sections under a low power shows marked lesions, both of atrophy and hypertrophy, in different portions of the epidermis, with a general inflammatory condition of the corium and subcutaneous tissue. Examining now carefully the epidermis in detail, we note first that the stratum corneum, stratum lucidum, stratum granulosum, and stratum Malpighii can be differentiated with great distinctness in most of the thicker portions where hypertrophy is present, while in the parts where atrophy has taken place the layers are indistinctly blended together, the stratum lucidum can scarcely be discerned, and the stratum Malpighii fades away often to a mere thread. On the free surface of the epidermis, and so closely adherent to the stratum corneum that

PLATE XIV.

KRAUROSIS VULVÆ

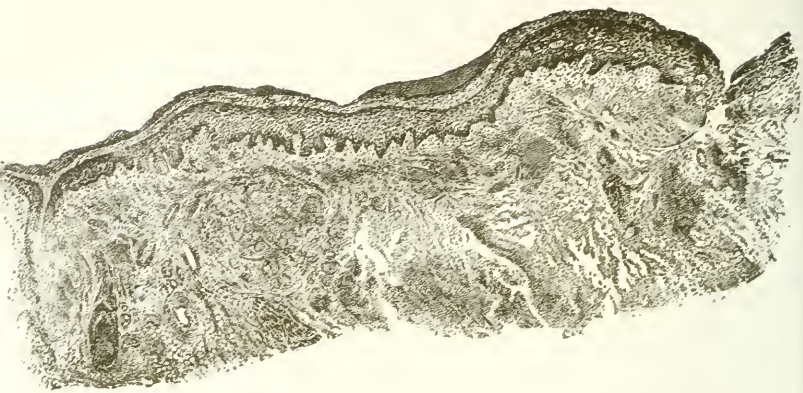


Fig. A.—Showing hypertrophied epidermis, with blood-crust adherent to the surface; to the right, fissure extending well into the corium. Hyaline transformation of outer portion of the corium, with entire absence of hair-follicles and sebaceous glands. In the deeper sub-epithelial tissue to the right, extensive areas of free red blood-corpuscles, with sclerosis of the elastic and muscular fibres; to the left, hair-follicles, blood-vessels, and bundles of muscular fibres in cross-section, with areas of small round-cell infiltration.

Fig. B.—Showing hypertrophied epidermis, adherent blood-crust on the surface; fissure extending through epidermis into the corium; and extensive round-cell infiltration in the sub-epithelial tissue. Hair-follicles and sebaceous glands entirely absent.

it appears as another layer, a blood-crust is seen. This crust is made up of red blood-corpuscles, the outlines of which are distinctly apparent in most parts, with a few leucocytes caught here and there among them. At intervals along the surface cracks, or fissures, in the epidermis are found, which usually penetrate the corium, and are often filled with blood-crusts (see *Plate XIV, Figs. A, B*). Near the border of healthy tissue the stratum corneum appears normal or as a narrow band of keratinous tissue, with protoplasmic outlines indistinct, and with no nuclei. As we follow it into the diseased portion it becomes enormously thickened in some areas, and in other localities almost entirely disappears. No protoplasmic outline at all can be discerned, the hæmatoxylin stain is taken indistinctly or not at all, and there is a marked tendency to the formation of whirls and twists resembling epithelial pearls. Free red blood-corpuscles are also occasionally present, and degenerated hair-follicles are discoverable both in longitudinal and cross-section, the shafts of which are degenerate and often replaced by blood-cells. The stratum corneum appears like a homogeneous fibrous band ; the stratum lucidum can be studied best in the preparations stained by Van Gieson's method, since it selects the picric acid dye, and is readily traced as a slender thread in all sections where extreme atrophy has not been reached. The width of the rete layer varies considerably in different parts of the specimens. Over those portions of the corium where inflammation is actively present, with diffuse small round-cell infiltration and sclerosis, the Malpighian layer is flattened and drawn out, and the papillæ are broad and low or wanting altogether. When, however, the inflammatory reaction is slight, small round cells appear, comparatively few in number, and the corium is but slightly altered ; the papillæ are considerably elongated and more numerous, and long finger-like processes of epithelium project between them (see *Fig. A*).

The tissue beneath the epidermis furnishes a study of much interest. In some few places in the corium the delicate wavy outline of the elastic fibres is present, but in far the greater part a more or less extensive change is noted. The outer layers of the corium are pale and slightly œdematous, the elastic fibres become indistinct, blend, lose their wavy outline, and become hyaline in character and matted together. Small round cells are found in large aggregations immediately beneath the epidermis, diffusely scattered throughout the corium and infiltrating the papillæ. In other places the corium appears dense and sclerotic, with scarcely any nuclei to be seen. The blood capillaries have disappeared from the corium except in a few places, and no sebaceous or sweat glands can be found in any of the preparations.

Areas of small round-cell infiltration extend deeply into the subcutaneous tissue, which also shows sclerotic changes. Here also, hæmorrhages have taken place, and free red blood-corpuscles are diffusely scattered through the loose stroma. Blood-vessels, fat, and unstriped muscles are present in normal amount. Points of special interest to be noted are the peculiar bundles that are found in the upper layers of the subcutaneous tissue. These can be seen both in longitudinal and in cross-section, and are well shown in the *Plate* (*Fig. A*). While present in such numbers that it seems practically out of the question that they should be degenerate nerve-fibres, the histological resemblance is nevertheless most striking. The fibres are in distinct bundles, surrounded by dense fibro-elastic tissue, and on cross-section appear like nerve-fibres. The centre of each fibre is occupied by a dark round body whose appearance is almost precisely like that of the axis-cylinder. That they are not nerve-fibres seems to be proved by the fact that the supposed axis-cylinder takes the hæmatoxylin colour when stained by Van Gieson's method; that upon cross-section the fibres are not exactly round, but fit against one another like muscle-cells: that upon longitudinal section spindle-shaped nuclei appear: and that when stained by Weigert's method the result is not characteristic. In none of the sections can any trace of nerve-fibres be positively found, though most careful search has been made for them.

Etiology.—Boldt and Williams present an interesting summary of the views of different authors as to the etiology of the condition. We may quote here a few of the most representative opinions. Breisky, who saw twelve cases, only attempted a clinical and pathological description, and could furnish no valuable etiological suggestion beyond the fact that some of the patients suffered previously from a vaginal discharge, and that in a number of them the symptoms of pruritus were markedly present.

Jenowsky (six cases) compares kraurosis with leukoplakia of the mouth and tongue, and with urethral stricture.

Orthmann (five cases) ascribes an etiological place to gonorrhœa and a leucorrhœal discharge.

Hallowell placed kraurosis among the large and interesting group of chronic inflammatory diseases of the skin and mucous membrane, such as ozæna, psoriasis of the mucous membrane, chimney-sweeper's eczema, and others, all of which are characterised by hypertrophy and metaplasia of epithelium, a hardened corium, and a tendency to terminate in epithelioma.

Reed saw six cases; and as a result of a study of these and the

reports of others, he inclined to the theory that disease of the peripheral trophic nerve-filaments, or of the ganglia whence they originate, was the primary etiological factor. This, however, is a matter of theory, and has no supporting evidence.

Longyear, while advancing no positive opinion as to the etiology of kraurosis, nevertheless states that he does not believe the disease to be due to any local or constitutional disturbance outside the nervous system, and that the morbid process is due to defective nerve-action, probably reflex in origin.

Veit describes kraurosis as a narrowing and shrinking of the vulva, which is brought about by an inflammation of the skin, which again is brought about, after intense itching, by scratching. That all cases of pruritus do not pass on into kraurosis is explained by the fact that many patients seek treatment for pruritus, and a sufficient alteration of the skin is not produced to bring about shrinking.

Sänger and Martin both lay stress on the inter-dependent relations which exist between pruritus and kraurosis, while Martin places special weight on its development out of a previously existing inflammatory condition. Sänger alludes to it as a senile and pre-senile atrophy of the vulva.

Boldt and Williams ascribe to kraurosis an inflammatory origin, and they agree with the hypothesis of Veit, that the itching induces scratching, which in turn sets up a chronic inflammatory condition, with the formation of cicatricial tissue in the deeper layers of the derma and subcutaneous strata, shrinkage and contraction of the vulva, and atrophy of the skin surface. They, however recognise the fact that the larger number of cases of pruritus apparently do not degenerate into kraurosis; it seems likely therefore that there is some hidden impulse which causes further changes than ordinarily take place with the symptoms in this disease, with which impulse we are as yet unfamiliar. This element may be either constitutional or local. When once this element is brought into play in the presence of pruritus, they would go still further in their explanation as to how this result is brought about. As is well known, the skin surface is the usual habitat of various micro-organisms capable of producing inflammation and even suppuration. On rubbing or scratching, irritation is produced and the normal cellular resistance impaired. The micro-organisms are now able to set up a low-grade inflammation which easily extends into the corium and underlying subcutaneous tissue. The skin surface may, however, be broken and the micro-organisms introduced from beneath the finger-nail or from the clothing. The corium and underlying subcutaneous stratum, rich in elastic tissue and

unstriped muscular fibres, become sclerotic and hyaline in consistency, lose their elasticity, shrink and contract. The blood-vessels are pressed upon, and their calibre is gradually lessened and destroyed, while the nerve-filaments are first rendered hyperæsthetic and then succumb. Primary hyperplasia, the result of irritation, gradually gives way to atrophy, until the entire thickness of the skin above the areas of scarred tissue is involved. When the entire area has become atrophic the progress of the disease is arrested, and the condition remains stationary, and the vaginal orifice narrow and contracted, but no further symptoms are manifest.

TREATMENT.—This may be either palliative or curative. The former is simply to relieve the subjective symptoms, which at times are excruciating. **Carbolic Acid** and **Cocaine** afford temporary relief, but the symptoms return soon after with renewed severity. Tait mentions the soothing effect of a solution of **Neutral Acetate of Lead in Glycerin**, placed on cotton between the nymphæ. Johnstone advises a salve of **Yellow Oxide of Mercury** in the early stages.

Pure **Nitrate of Silver** applied repeatedly lessens the suffering, but has no effect upon the progress of the disease. **Hot Water** often affords considerable temporary relief. Heitzmann has practised curettement and scraping of the diseased tissue, but the result has been unsatisfactory and the process a long and painful one, requiring very many repetitions.

Martin was the first to suggest **Complete Excision** of the diseased tissue as a curative measure, and applied the method in five cases, four of which were permanently cured, whilst one experienced a recurrence. Reed adopted this plan very successfully. To be completely successful total excision of the diseased tissue should be accomplished, and the prognosis is then good; otherwise there may be recurrence, especially when the operation is performed before the atrophic process is complete. Boldt and Williams give the history of an extreme case where radical treatment was carried out. *Figs.* 44 and 45 show respectively the condition before operation and the denuded area, with the mode of approximation of healthy skin and mucous membrane. After the operation a large glass plug, two inches in diameter, was passed into the vagina, and held in place by a T-bandage. The following day, on account of the tension of the stitches, this plug was replaced by a smaller one.

The plug was removed twice daily, and vaginal douches of boric acid administered each time. Union being completed, the stitches were removed at the end of ten days. The bladder was catheterised each time the plug was removed. Gradually the patient was

taught how to introduce the plug, and on returning home at the end of three or four weeks was given a hard rubber plug one inch and a quarter in diameter, with instructions to introduce this twice daily, lie

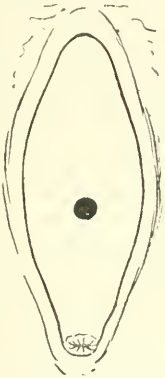


Fig. 44.—Showing affected area with contracted vaginal orifice.

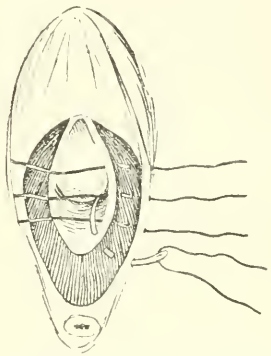


Fig. 45.—Showing denuded area and approximation of healthy skin and mucous membrane.

down, and allow it to remain an hour each time. After several months the introduction was reduced to once a day, and was finally withdrawn altogether.

REFERENCE.—[1] "Amer. Jour. of Med. Sci.," Nov., 1899.

[We may refer those interested in the subject to a good bibliography at the end of Boldt and Williams' paper.]

T. Colcott Fox, M.B.

Heller[1] in a case of over ten years' duration in a maiden lady, aged fifty-nine years, got good effects from weekly cauterisation with **Formalin,** and painting of the vulva thrice daily with **Ichthyol** and water, and hot compresses kept on for an hour every day. Heller could not get histological evidence that there was a primary hypertrophy with secondary atrophy, but he thinks kraurosis is a chronic inflammatory process beginning superficially and ending deeply with atrophy.

REFERENCE.—[1] "Monats. f. Geb. u. Gyn.," Jan., 1900.

WHITLOWS (Diphtheritic). *Priestley Leech, M.D., F.R.C.S.*

Seitz[1] has found genuine diphtheria bacilli in one case of whitlow out of two hundred cases which he has examined bacteriologically. Though the throat in this case appeared normal it gave Löffler's

bacillus on cultivation from the tonsils, and the youth, who had a habit of biting his nails, had infected his finger from his throat.

Hau[2] made a necropsy on a child who had died from diphtheria; next day his finger was red and painful. Cultures from fluid underneath the finger gave colonies of Löffler's bacillus. The general symptoms are slight or absent, from which it appears that man has considerable power of resistance to diphtheria when inoculated hypodermically. It has been known that slight whitlows have been common in diphtheria, but it has not hitherto been proved that they were due to the diphtheria bacillus.

REFERENCES.—[1] "Corresp. f. Sweizer. Aertze.," Nov. 1, 1899; [2] "Lyon Méd.," Jan. 28, 1900.

WOILLEZ'S DISEASE. *Prof. H. P. Loomis, M.D., New York.*

Carrière[1] contributes an exhaustive article on Woillez's disease, or idiopathic pulmonary congestion. This is an acute affection of the lungs following rapidly on simple exposure to cold, or in some cases resulting from traumatism, as in falls or blows, causing injury to the chest. The symptoms appear from four to seven hours, or even less after exposure. In some instances quoted by the author twelve to fourteen hours elapsed before the appearance of slight rigors, which, together with the sharp pain in the side, constitute the earliest symptoms. The severe and prolonged rigor which may usher in an acute pneumonia is never observed in this disease. The slight rigors may last three or four hours. The temperature rises fairly rapidly from the beginning, and may soon attain 40·5° C., the pulse being 120 to 130. There is much thirst and complete anorexia. Dyspnœa may be a marked symptom later on, but in the early stages is not severe. There is a slight cough, which becomes irritable. Expectoration is slight.

When the disease is fully developed the pain in the side becomes more marked. On physical examination the affected side of the chest may appear on inspection increased in size—a fact to which Woillez first drew attention, though it does not seem to be invariably present. Movement seems to be deficient. On palpation vocal fremitus is much diminished as a rule, and on percussion there is some impairment of resonance, but indefinite in outline. There does not seem ever to be actual dulness. Expiration is prolonged, and inspiration somewhat interrupted. The vesicular murmur is distant; in some cases, however, it is increased, assuming the puerile type: a few crepitative and subcrepitative *râles* may be heard. Bronchophony is rare, but a symptom described by Serrand—to which the name echophony has

been applied—is present, namely, a form of echo immediately following vocal sounds.

The disease appears to consist in an acute unilateral or local pulmonary congestion. Its duration, according to the cases quoted by the author, varies from two to four or five days, and in some instances relapsing. The majority of cases recover, though occasionally the disease may end fatally. Bacteriological examination of the sputa shows the presence of staphylococci, and occasionally pneumococci, of Fraenkel.

Post mortem examination simply shows acute congestion of the pulmonary tissue without consolidation. The blood expresssed from the lung shows the presence of the same organisms as noted in the sputum, and sections of the organ show the same.

Treatment is merely symptomatic; dry cupping and poultices usually relieve the pain rapidly, and quinine may be administered internally.

REFERENCE.—1 "Rev. de Méd.," Oct., 1898.

PART III.—MISCELLANEOUS.

Sanitary Science, 1900.

BY JOSEPH PRIESTLEY, B.A., M.D., D.P.H.,

Medical Officer of Health, Borough of Lambeth, London.

ARSENIC IN BEER.

Considerable panic was caused at the end of the year in Manchester and some northern towns by the discovery of arsenic in quantities sufficient to cause poisoning symptoms in beer. To Dr. J. S. Reynolds, of Manchester, belongs the honour of having traced a series of cases of peripheral neuritis to the consumption of arsenic-infected beer and porter. Several breweries were found to be affected, and the beers were of the cheaper and commoner varieties. The arsenic has been finally traced to the glucose or inverted sugar (as a substitute for malt) used in making certain beers. This glucose or inverted sugar is made by the action on starch of sulphuric acid, which, in the cases discovered, is found to be the cheap or commercial variety, made from iron pyrites which contain traces, and even at times large amounts, of arsenic.

The principal symptoms consist of weakness and want of power in the limbs, together with pains and abnormal sensations, etc., and both men and women have been affected. The preventive measures taken (viz., the discovery, and the calling in, of all known poisonous beers) appear to have been successful, though much public alarm has naturally been caused, remembering what a common drink in England (and elsewhere) beer (or porter) is.

BACTERIOLOGY AND BACTERIOLOGICAL LABORATORIES.

The principle is now acknowledged that municipal bacteriological laboratories form a part, and a most important part, of a public health organisation. The use of bacteriology as an *aid* to diagnosis in connection with infectious diseases is so well known that it seems unnecessary to refer to it. It must be remembered that such bacteriological diagnosis can never take the place of clinical diagnosis, but there are certain doubtful cases, the diagnosis of which can only be cleared up by means of bacteriology. Again, in such laboratories milk, cream, butter, etc., are now, as a routine, examined bacteriologically for the presence of tubercle bacilli, or other infectious germs ; as also water supplies. The Congress of Hygiene and Demography that met in Paris during the year unanimously approved the principle, that

bacteriological laboratories ought to be established by authorities in all countries, and that at such laboratories bacteriological examinations should be able to be made gratuitously in connection with :—

(1,) The immediate diagnosis of tuberculosis, typhoid, and diphtheria.

(2,) The bacteriological supervision of water and milk supplies.

(3,) The testing of disinfecting arrangements, etc., etc.

BIOLOGICAL TREATMENT OF SEWAGE.

The days of chemical treatment for sewage purification are numbered. Expert after expert, and authority after authority, are being slowly, but surely, converted to the opinion that the bacterial, or biological, treatment is the treatment of the future. Finality has not yet been reached, but year by year, and month by month, improvements are being suggested as the results of practical experience gained on experimental, or other, sewage farms belonging to different authorities. The London County Council are doing a special good work, as also the County Council of Staffordshire, with the result that, viewing the subject from the standpoint of to-day, it may be safely affirmed, without fear of contradiction, that raw sewage to be treated bacteriologically with success must be preliminarily treated : (1,) By rough screening through coarse gratings, to get rid of the coarser materials ; and (2,) By rapid sedimentation, to get rid of the smaller matters (grit, etc.), by subsidence. In connection with this preliminary treatment, the septic tank principle is, apparently, holding its own against all comers, under certain conditions ; whilst it must be remembered that, in the case of large towns, the sample principle is being carried out within the miles and miles of the sewers themselves prior to the sewage reaching the outfall. During this time, the anaërobic bacteria are principally at work, to be followed afterwards by the aërobic bacteria within the pores of the coke filter beds, which, to be efficient, must be duplicated, if not triplicated. The Manchester large precipitation tanks are practically to all intents and purposes septic tanks. Prof. Clöwes and Dr. Houston have shown that, when crude sewage is put directly upon the beds, the coating which sooner or later forms on the surface of the coke consists, in the case of the London sewage with which the experiments were made, of chaff and straw (probably derived mainly from horse dung), hair, fibrous matters, woody fibres from the wearing of the wood pavement in the streets, sand, grit, and fine mud, whilst bacteria also are found in very large numbers, *e.g.*, bacilli enteritidis sporogenes, "acid-fast" bacteria like tubercle bacilli, etc. This being the case, it will readily be understood how the capacity of the coke beds is reduced, and how important it is, therefore, to see that the preliminary treatment (*e.g.*, screening and sedimentation) is carefully carried out. The deposit on the coke is principally cellulose, which is but slowly acted upon by bacteria.

Periods of rest for the aëration of the lowest portions of the deep coke beds, and careful supervision of the plant and filters, are needed, and the best results are obtained by passing the final effluent over

another filter, or over land. The gas that is formed in the septic tanks can be used for lighting purposes.

The principle of the bacterial or biological treatment of sewage is old enough, but what is being done to-day is the organising of the bacteria, and providing them with most suitable and healthy surroundings in which they will be able to carry out their work to the best advantage, with special reference to the prevention of overcrowding amongst them.

During the past year good results have been chronicled in connection with the bacterial treatment of sewage containing manufacturing refuse, *e.g.*, waste from breweries, tanneries, etc.

DANGERS OF WATER GAS.

Attention has recently been drawn anew to the dangers arising from the use of carburetted water gas, the dangers being due to the CO (carbon monoxide), which exists in a proportion of 30 to 50 per cent. at times. The gas is produced by the action of steam driven alternately with air through coke at white heat in a "producer," *i.e.*, tower-shaped furnace. CO and H are produced, and these are passed through a carburetter, *i.e.*, a fire-brick chamber kept at a red heat, into which is injected petroleum oil which cracks and is converted into gas, which mixes with the water-gas, making carburetted water-gas.

The symptoms due to poisoning by water-gas, which escapes through defective fittings, or during incomplete combustion, into bed, or living rooms, are insidious in their onset (*e.g.*, headache, anæmia, defective nutrition, etc.), followed, in larger doses, by giddiness, palpitation of the heart, throbbing of the blood-vessels of the head, weakness of the limbs, and finally death. The effects of the poison are cumulative. The CO combines with the hæmoglobin of the blood to the exclusion of oxygen.

As gas companies find it profitable to introduce a certain proportion of carburetted water gas with coal gas—a practice that is growing, legislation is needed so that compulsory regulations can be made, limiting the proportion of CO in the public gas supply at night to 12 per cent.—a limit to be subject to alteration, as may appear fit, to a responsible central authority.

In Boston, U.S.A., where the gas is much used, it is stated that one in every three hundred deaths is due to CO poisoning. The gas has no smell and no taste, nor does it cause irritation.

FEMALE SANITARY INSPECTORS AND LADY HEALTH VISITORS.

The late Vestry of St. George-the-Martyr, London, did good work in helping to decide the principle as to the value of female sanitary inspectors or health visitors, and in having the matter laid before the Local Government Board, through the London County Council, with a view to one or two important points being cleared up. The late Vestry decided to elect a female sanitary inspector, part of whose duties should be the visiting of the homes of the poor and the teaching of the elementary principles of domestic hygiene (*e.g.*, cleanliness,

proper feeding of children and infants, etc.), and they applied, in due course, to the Local Government Board to confirm such an appointment, as required by the London Public Health Act, 1891. This the Board declined to do, stating that the extra duties mentioned above were not mentioned in the Sanitary Officers (London) Order, 1891—a decision which led to the London County Council being unable to pay the half of such a female inspector's salary out of the common Metropolitan fund. The London County Council has decided to approach the Local Government Board with a view to the Sanitary Officers (London) Order being altered and amended, so that a qualified female sanitary inspector (qualified by examination and experience) shall no longer be barred from exercising her powers for good as a lady visitor, or health visitor, as well. All are agreed as to the immense importance of elementary (domestic) hygiene being taught amongst the poorer classes in our large towns, and such teaching should, therefore, be encouraged in every way—even by the Local Government Board. Manchester, Salford, Liverpool, Birmingham, and other provincial towns have already proved the value of the work carried out by lady health visitors, who, by personal visitation of a district, by mothers' meetings, etc., are able to teach habits of cleanliness, explain the care to be taken in the feeding of infants and children, and the best method of utilising food.

HOUSING OF THE WORKING CLASSES.

This subject has been much discussed during the past year, and whilst no very startling suggestions have been forthcoming, distinct advance has been made. It is now practically admitted by all that area-condemnation under Part I of the Housing of the Working Classes Act, 1890, is so expensive and so unsatisfactory that it must only be adopted in very exceptional cases. Much more use must be made in the future than in the past of Parts II and III of the Housing Act—the former dealing with house-condemnation, and the latter with the provision of lodging houses for the working classes, and the general powers given under the ordinary Public Health Acts. This opinion has been come to by the Government, and expressed in a circular sent out by the Local Government Board to every sanitary authority. As the circular states that much good can be effected under Parts II and III of the Housing Act and under the Public Health Acts, it has not met with much commendation from health authorities generally, who, naturally, do not like to be told of duties that they have failed to carry out satisfactorily. What is required is to attack unhealthy *houses*, and not unhealthy *areas*. The great difficulties and enormous costs connected with large clearance schemes are now acknowledged—the cost of clearance schemes by the Metropolitan Board of Works working out at £59 per head, and those by the London County Council at (about) £50 per head, whilst other municipal schemes work out at or about the same. It is only natural, therefore, that the Congresses and Conferences that have been held during the past year in Paris, London, Glasgow, etc., should have been flooded with the following well-worn suggestions:—

(1,) The onus and cost to be thrown upon the different owners of an insanitary area, such owners to form themselves into a Trust, acting under the Government.

(2,) Freeholders to have the right of re-entry upon their lands over the heads of obstructing leaseholders.

(3,) Ground rents to be taxed.

(4,) Compulsory register to be kept of all owners of insanitary or slum property within a district.

(5,) Rents in a district to be fixed, or re-adjusted, by specially appointed fair rent courts.

(6,) Factories and workshops to be removed from the centres of towns into the suburbs, or country, thereby drawing the workers away from the congested and overcrowded parts.

(7,) Working class dwellings to be provided outside the area of a Sanitary Authority and cheap and rapid means of transit (cheap trams and trains) provided.

(8,) Period for repayment of loans to be extended, and money to be lent at lower rates of interest.

In connection with suggestion No. 7, the new amended Part III of the Working Classes Act (passed in 1900) gives powers to Sanitary Authorities to acquire land for the erection of workmen's dwellings, or even dwellings themselves, *outside* the area over which they have jurisdiction. This amended Act is short, but it has already given a spurt to authorities to erect dwellings on the outskirts or in the suburbs and to carry the workers there by means of cheap and rapid means of transit. Theoretically nothing could be simpler, but whether or not, in practice, such a scheme will lessen the congestion of the towns is a matter that remains to be seen. The better class artisans may take advantage of such facilities, being able to meet the extra cost of travelling and to waste the extra time in travelling, but what about the unskilled labourers and the very poor? They must be catered for near to their work and in the central parts of towns, as their wages will not admit of their being taken away into the suburbs, even if they were willing to go. That being the case, the Sanitary Authority ought to be prepared to supply this want by the erection, or provision, of plain tenemented dwellings or municipal lodging houses, dipping into the ratepayers' purse, if necessary. Another important point is the question of municipal *versus* private enterprise. Whilst it is true that even with private firms there is an increased cost year by year due to (*a*,) Increased price of land and building materials, (*b*,) Shorter hours, less work and increased wages, (*c*,) Increased local taxation, etc., there is a still greater one when the work is carried out by Sanitary Authorities, even though such authorities have the means of borrowing money at lower rates of interest. Is a public authority justified in entering into competition with private firms, and building (and maintaining) dwellings, which can only be done with assistance from the rates? Ought they not rather to purchase the land, and lease it to private companies, lending also the money for building etc., purposes, at low rates of interest? Such are some of the diffi-

culties edging round the subject. The red-tapeism, and the strict and absurd rules, of the Local Government Board in connection with housing schemes have come in for a fair share of criticism and abuse during the past year.

Instead of actually building houses for the working classes, existing houses can be purchased, and (if necessary) adapted to requirements by being converted into flats or tenements (complete on each floor).

MALARIA AND PLAGUE AND THEIR PREVENTIONS.

Malaria.—Much has been heard during the past year about malaria, and what have hitherto been considered the *theories* of Major Ross may now be regarded as *facts*. English observers as well as others in Italy, India, Africa, Jamaica, and elsewhere, are practically agreed that malaria in man is due to a parasite (three varieties), which lives alternately in the blood of man and in the tissues of the mosquito of a particular species—the so-called genus *anopheles claviger*, which breeds in marshes, puddles, and natural ponds, and which, when infected, may, by biting, transfer the germs from man to man. The malaria germs belong to a class of unicellular organisms known as hæmamœbidæ, closely resembling the coccidia ; and they reproduce themselves sexually as well as asexually. They pass their lives chiefly as intra-cellular parasites in the red blood-corpuscles of man (or other vertebrates), having in the case of man a limited duration of forty-eight to seventy-two hours. When the germs are enclosed in the red corpuscles, the disease is quiescent, and the patient is in the so-called *interval*, to be followed by (*a*) the *cold stage*, and (*b*) the *hot stage*—the former corresponding with the sporulation of the germs and their passage into the blood plasma, and the latter with the passage of the sporules (after certain changes) back into fresh red corpuscles. The cold stage consists of malaise, headache, chilliness and rigors—the skin being cold and the temperature rising, whilst the hot stage consists of profuse perspiration—the skin being hot, and the temperature falling. The three stages occur periodically every forty-eight or seventy-two hours according to the variety of germ.

The malaria germs finally leave their hosts by means of mosquitoes, which suck them from the blood of man, through their probosci, into their stomachs, where certain vital changes take place in the germs with the formation of sporozoites, which finally pass into the salivary glands of the mosquitoes, whose bites transfer them back into man ; and so the disease is propagated.

It naturally follows from the above short account that, to prevent an attack of malaria, all that is required is for the persons exposed, to prevent themselves from being bitten by infected mosquitoes of the special genus mentioned. Drs. Sambon and Low, of the School of Tropical Medicine, are testing the truth of this statement in a very practical manner, viz., by living, by night, in a specially constructed mosquito-proof house situated in one of the worst malarial districts, near to Rome. So far the result of the experiment has been satisfac-

tory, as neither of the two experimentalists has yet developed malaria. Mosquito-proof houses and nets or guards (properly used), and the draining of, and doing away with, all marshes, puddles, etc., where the mosquitoes breed, are the preventive measures that suggest themselves, and that will be carried out in future.

Plague.—The outbreak of bubonic plague in Glasgow at the end of August has caused the subject to be much spoken about, not only by experts but also by laymen. The daily papers are responsible for trying to get up a panic about the outbreak, but fortunately they were not successful. The outbreak took place in one of the poorest and most insanitary districts of Glasgow, and therefore the disease ought to have spread like wild-fire (so said the alarmists), but it did not. The cause is not far to seek. The Glasgow Authorities did not lose their heads, but brought to bear the usual weapons that have again and again been proved to be useful in combating outbreaks of serious infectious disease, *e.g.*, (1,) Immediate notification ; (2,) Early isolation ; (3,) Quarantining (or segregation) of all suspects or contacts ; (4,) Efficient disinfection and cleansing ; (5,) Exact diagnosis by means of bacteriology ; (6,) House to house visitations to find out not only actual cases but also contacts ; (7,) Other special precautions, *e.g.*, destruction of rats, and inoculation with anti-plague serum of all attendants and contacts.

The origin of the first case is obscure, but the majority of cases have all been traced to a common source of infection, the practice of "holding wakes" being in great part responsible for the spread. There have been thirty-four cases of plague in all (with fifteen deaths), whilst one hundred and seventy suspects or contacts have been watched in the Corporation Refuge houses, and the cost to the city has been estimated (including loss of trade) at one to two million pounds.

The disease is due to the entrance into the body of the bacillus pestis, and its incubation is three to five days generally, but may extend from forty-eight hours (as a minimum) to ten or even fourteen days (as a maximum). The symptoms may be summarised as follow: Weakness in mind and body, depression, muscular aching, loss of appetite, nausea, vomiting, diarrhœa, chilliness, giddiness and palpitation, tongue swollen and coated with white fur (red edges), high temperature, blood-shot eyes, drawn and haggard face, raving and delirium, and finally death. The lymphatic glands (especially those in the groins, but also those in the armpits, neck, etc.) swell and become painful, and may finally suppurate on the seventh or ninth day of illness. The temperature generally rises on the second day, falls on the third day, *may be* normal on the fourth, runs up again on the fifth and sixth, and falls again on the seventh or eighth. Death generally takes place suddenly on the fifth or sixth day. The varieties of the disease appear to be : (1,) Pestis minor (including pestis ambulans), and (2,) Pestis major, and may take the form of buboes, pneumonia, or septicæmia. In connection with plague, the Indian Government speaks with no uncertain voice

as to the great value of anti-plague inoculation in not only sensibly lessening the liability to the disease, but also greatly increasing the chances of recovery of persons attacked—there being no risk from such inoculations to healthy persons. Haffkine's inoculation is prophylactic chiefly; Yersin's serum, curative.

Plague was made compulsorily notifiable throughout England and Wales by the Local Government Board on Sept. 19th, 1900.

METROPOLITAN WATER SUPPLY.

The Royal Commission (under the chairmanship of Viscount Llandaff) on the London Water Supply, reported, after two-and-a-half years' work, at the beginning of 1900. Many witnesses had been examined, and many special investigations undertaken with the result that the Commission reported as follow:—

(1,) Undertakings of the water companies to be acquired by agreement or by arbitration, and managed by a public authority (but *not* by the London County Council), without necessarily having to provide a sinking fund to redeem in a given number of years (say sixty or eighty) the money borrowed to furnish the purchase money, and to increase the water supplies—an action that would necessitate an increase in the water charges, or an appeal to the ratepayers' purse.

(2,) A Water Board (permanent) to be established, consisting of not more than thirty members, specially selected for their knowledge of water matters, the Local Government Board to choose (and appoint) the chairman and vice-chairman (both to be salaried), and the County Councils and River Conservators to have *pro ratâ* representatives—the whole Board being under the influence of Parliament.

(3.) The purchase money to be obtained by the issue of a 3 per cent. stock, secured on the water charges over the whole area.

(4.) Increased storage to be provided, as by such means the supplies from the Thames and Lea valleys and from the Kent wells will be found to be all-sufficient for the needs of the Metropolis until 1941.

Such are the important points, but there are minor ones dealing with the control of water supplies by Local and other Authorities, meter supply, checking the amount of water to be drawn from the Thames and Lea, conditions of storage and filtration, control by water examiners (who, it is suggested, are to have powers to enter all waterworks, take samples, and examine bacteriologically and otherwise), etc.

PREVENTION OF TUBERCULOSIS.

Bacteriological examinations during the year have shown that more milks are tuberculosis-infected than is generally supposed, and the importance of carefully supervising milk supplies is becoming more and more acknowledged. Veterinary surgeons are practically agreed that tuberculin is a reliable and safe test for diagnosing the presence of tuberculosis in animals, but affords no index of the extent or degree of the disease. The test, however, will not produce tuberculosis in healthy animals, and has no deleterious effect upon the general health

of the animals. Manual manipulation of an udder is not sufficient alone for discovering the presence of tubercle. The London County Council have decided that all cows in London cowsheds shall be inspected by a veterinary surgeon regularly once in every three months, and that a systematic bacteriological examination shall be conducted of milks collected from purveyors. Town milks appear to be purer, from a point of view of tuberculosis infection, than country milks—a difference of as much as 6·2 per cent. in favour of town milks in Liverpool, and the difference is not far to seek—cowsheds or shippoons, and the cows themselves, being much better cared for, and more sanitary in towns than in rural districts, at least, speaking generally.

With regard to tuberculosis as it affects man, the importance of Sanatoria has been much emphasised. It appears that with early treatment 20 to 40 per cent. of the sufferers wholly recover; whilst much good arises from the isolation of the patients, and from the educational effect which such isolation and treatment have upon the inmates of Sanatoria and others.

RAILWAY CARRIAGES AS CARRIERS OF INFECTION.

Some startling statements were made by Prof. Hamilton at the Congress of the Royal Institute of Public Health during the year in connection with the infectious germs to be found in ordinary railway carriages, tram cars, omnibuses, etc. From experiments it would appear that tubercle bacilli are to be found in dust and dirt taken from the floors (and elsewhere) of carriages, whether first, second, or third classes. The bacilli have even been found in cushions and braidings, *i.e.*, the upholstery. As what applies to tubercle bacilli, applies also to the germs of influenza, diphtheria, etc., it follows that there is much room for improvement in the condition of English railway carriages, which ought to be built so as to be readily disinfected and cleansed, *e.g.*, the provision of moveable boards and moveable cushions, and the general sanitary construction of such carriages.

From enquiries, it appears that railway carriages are taken into the works for the purpose of being overhauled and the upholstery removed and beaten at stated intervals, the length of which is sufficient to make the whole procedure more or less of a farce; whilst at still longer periods the horse hair or other padding is taken out and cleaned and carded—the woodwork being treated at the same time with disinfectants. The *daily* sweeping, dusting, and washing of carriages (including the beating of cushions) is so well known by all travellers as to need no comment as to its very perfunctory nature, generally speaking.

RETURN CASES OF SCARLET FEVER AND DIPHTHERIA.

The Royal College of Physicians of London have reported on the subject of "return cases" of scarlet fever and diphtheria in connection with a special memorandum issued by Dr. W. J. Simpson on behalf of the Metropolitan Asylums Board, but there is practically nothing new

contained therein. The report is, however, useful as marking time, *i.e.*, showing the stage at which our knowledge on the subject of these so-called "return cases" has arrived at the end of the XIXth Century. The percentage of true "return cases" amongst the patients discharged from the hospitals of the Metropolitan Asylums Board (extending over a period of six months) is ·5 in diphtheria and 1·3 in scarlet fever, or a total of 1·1 (taking the two diseases together). Of the total return cases 80 per cent. were found to be suffering from some mucous discharges, either during their stay in hospital, or shortly subsequent to their return home.

The later desquamation of the skin in scarlet fever is little (if at all) infectious, whilst the mucous discharges (rhinitis and otitis) appear to be the chief cause of the trouble, but whether such discharges are themselves infective, or merely the medium in which infection is carried, is not satisfactorily proved as yet. The College suggests that the investigations should be extended over a further period of twelve months, and that separate discharge, or final isolation, wards should be provided for (*a*) cases having no mucous discharges, and (*b*) cases having mucous discharges—the latter to be sent home only after ten or fourteen days, during which the affected part is regularly to be irrigated, or syringed, with some antiseptic solution. No definite period of time for keeping patients in hospital before discharging them and sending them to their homes is suggested, in the case of either scarlet fever or diphtheria.

SUMMER DIARRHŒA.

Dr. Waldo in the Milroy Lectures attributes attacks of summer diarrhœa to *inter alia* the excrement of horses on the public roads, which dries and is thus reduced to powder, and in the form of dust is blown into houses, thus obtaining entrance into milk and other articles of food. The natural corollary is the importance of strict and more careful municipal cleanliness and cleansing. When the disease proves fatal, a difficulty arises as to the proper term to use for certification. Much confusion has, in the past, arisen from the numerous terms, or synonyms, which have been used in connection with this certification and classification of deaths from "diarrhœa," *i.e.*, "epidemic diarrhœa," so-called in the nomenclature of diseases. There has been no definite system hitherto, and it is suggested by the Royal College of Physicians that, as the disease is a general disease of specific character in the same sense as enteric or other fevers occurring in persons of all ages, the only names to be used should be epidemic (or zymotic) enteritis, or epidemic diarrhœa—all other synonyms being entirely discarded, *e.g.*, gastro-enteritis, muco-enteritis, gastric catarrh, etc. A further suggestion is made by the Society of medical officers of health to the effect that, when the disease occurs in other than epidemic seasons, the term "zymotic enteritis" should be used.

In this way more accurate statistics will be tabulated, and the difficulty in properly designating the causes of deaths from diarrhœal diseases is so generally acknowledged that the suggested change is a welcome one, and will, it is hoped, be readily adopted.

Legal Decisions

AFFECTING MEDICAL MEN AND THE PUBLIC HEALTH.

By J. E. COONEY, L.R.C.P., D.P.H.

Late Medical Officer of Health of Fulham, London; of the Middle Temple, Central Criminal Court, and of the South-Eastern Circuit, Barrister-at-Law.

ADULTERATION OF FOOD.

BENNETT *v.* TYLER (Divisional Court), 64 J.P. 119.

Adulteration—Chewing Gum—Paraffin Wax—Article of Food—Sale of Food and Drugs Act, 1875, ss. 3, 6.

Cases stated by justices for the county of Middlesex.

An information preferred by the respondent against the appellant, who is a shopkeeper at 5, Park Road, Teddington, and retails sweets, groceries, etc., for selling a certain article of food, to wit, chewing gum, which had been mixed with 8·3 per cent. of paraffin wax. The packet containing the chewing gum was wrapped in a label, on which was printed "Barratt and Company, Lemon Chewing," and "This must not be eaten—for chewing only." It was admitted that the said wax was an essential ingredient of the said chewing gum, and were it not present, the article so sold would not have possessed the properties and characteristics of chewing gum. It was proved that paraffin wax, if received into the stomach would be injurious to health, and if the said chewing gum was swallowed it would be injurious to health, but not if it were used as intended, namely, as chewing gum. It was also proved that the chewing gum could not be dissolved by the saliva of the mouth, nor could it be masticated by the teeth, but it could be swallowed.

Channell, J.,—I am of opinion this appeal must be allowed, but it is allowed because of the facts stated in the special case. There might have been facts stated with regard to these materials which might bring the case within the Act.

Bucknill, J., I agree. *Appeal allowed.*

BANKS *v.* WOOLER (Divisional Court), 64 J.P. 245.

Adulteration—Milk—Ten per cent. added Water—Milk exceptionally Good—Trifling Offence—Sale of Food and Drugs Act, 1875, s. 6, *Summary Jurisdiction Act*, 1879, s. 16.

Case stated by the justices at East Hám. On an information by the appellant against the respondent for selling milk having 10 per cent. of water, the analyst's certificate stated that the sample (about one-third of a pint) contained fat, 3·55 parts ; non-fatty solids, 7·46 parts ; water, 88·99 parts ; total, 100. It appeared to the justices that the milk was exceptionally good, the butter-fat being above normal, and having regard to all the circumstances they thought that though the charge was proved the offence was of so trifling a nature that it was inexpedient to inflict any punishment, and they therefore dismissed the information.

Held (Channell and Bucknill, JJ.), That if the milk had been exceptionally good after adulteration, the justices might consider the offence too trifling to convict ; but if the milk was only exceptionally good before adulteration the offence was not trifling, and they should convict. *Case remitted to the justices.*

ROBERTSON *v.* HARRIS (Divisional Court),

2 Q.B. (1900) 117 ; 46 J.P. 565.

Adulteration—Contract to supply Milk in Instalments—"Milk to be Pure New Milk"—Written Warranty—Whether a Warranty within the Act—Sale of Food and Drugs Act, 1875, s. 25.

Case stated by the stipendiary magistrate for Sheffield. By sec. 25 of the Sale of Food and Drugs Act, 1875, "If the defendant in any prosecution under this Act prove to the satisfaction of the justices . . . . that he had purchased the article in question as the same in nature, substance and quality as that demanded of him by the prosecutor and with a written warranty to that effect," he shall, under certain other specified conditions, be entitled to be discharged from the prosecution. Upon the hearing of an information against the respondent for having, contrary to the provisions of the Act, sold on December 15th, 1899, certain milk to the appellant which was not of the nature, substance, and quality demanded of him by the appellant, the respondent relied on an agreement in writing dated January 20th, 1899, by which a farmer agreed to sell to the respondent 1000 gallons of milk weekly, "the milk to be pure new milk." The magistrate was of opinion that this agreement contained a written warranty within the meaning of sec. 25 that the milk should be new milk, and he accordingly discharged the respondent from the prosecution ; but at the request of the appellant stated this case for the opinion of the court.

Held (Ridley J. and Darling J.), That, even if the agreement amounted to a warranty within the meaning of s. 25, there must be some evidence in writing to show that the particular milk sold to the appellant was purchased with that warranty, and that in the absence of that evidence the agreement afforded no defence to the respondent. *Appeal allowed.*

BATT *v.* MATHINSON (Divisional Court), 64 J.P. 615.

Adulteration—Golden Syrup—Procedure under Repealed Section—Offence Previous to New Statute coming in force—Power of Amendment—Sale of Food and Drugs Act, 1875, s. 6—*Sale of Food and Drugs Act Amendment Act*, 1879, s. 10—*Sale of Food and Drugs Act*, 1899, s. 19—*Interpretation Act*, 1889, s. 38 (2)—*Summary Jurisdiction Act*, 1848, s. 1.

Case stated by justices for the county of Northampton. An information was laid by the respondent against the appellant, manager of the Midland Stores, Wellingborough, for selling golden syrup on the 19th December, 1899, the same being adulterated with 25 per cent. of glucose syrup, and not of the nature, substance and quality of the article of food demanded of him. Having heard the evidence the appellant was fined £3 and 7s. costs.

Before the hearing of the case an objection was raised by the appellant that on the information laid against him on the 8th of January, 1900, for an offence under the Sale of Food and Drugs Act, 1875, the procedure prescribed by the Sale of Food and Drugs Act, 1899, which came into force on the 1st of January, 1900, and repealed the section as to procedure contained in the Sale of Food and Drugs Act, 1875, was not complied with.

Held (Ridley and Phillimore JJ.), That although the offence was committed before the later Act came into force, yet, as proceedings were not taken till after the later Act came into force, the procedure required by the later Act must be complied with, and that the non-fulfilment of such requirements was not a matter for amendment under the Summary Jurisdiction Act, 1848. *Appeal allowed.*

BEARDSLEY *v.* WALTON & CO. (Divisional Court), 2 Q.B. (1900) 1; 64 J.P. 436.

Adulteration of Food and Drugs—Camphorated Oil—Compounded Drug—Sale of Food and Drugs Act, 1876, ss. 6, 7.

Case stated by justices for the county of Wilts. An information was laid by the appellant against the respondents, a limited liability company, for selling camphorated oil containing 8 per cent. of camphor, whereas that prescribed by the British Pharmacopœia should contain 21 per cent. by weight of camphor. The proceedings were taken under sec. 6 of the Act which enacts: "No person shall sell to the prejudice of the purchaser any article of food or any drug which is not of the nature, substance, and quality of the article demanded by such purchaser, under a penalty not exceeding £20, and subject to certain provisoes."

Sec. 7 of the Act enacts that "no person shall sell any compound article of food or compounded drug which is not composed of ingredients in accordance with the demand of the purchaser, under a penalty not exceeding £20."

The respondents submitted that, as camphorated oil was a compounded drug proceedings could only be taken under s. 7 of the Act, and that no offence had been or could be committed under s. 6. The

appellant contended that camphorated oil clearly was a drug as defined by s. 2 of the Act, that s. 7 was primarily intended to apply to physicians' prescriptions, that he could have proceeded under either section, that the penalty was the same under both sections, and that an offence had been committed under s. 6, under which he had elected to proceed. The justices unanimously held that camphorated oil was a compounded drug, and consequently the summons could only be issued under s 7 of the Act.

Held (Channell J. and Bucknill J.), That a sale to the prejudice of the purchaser of a compounded drug, which is not of the nature, substance, and quality of the article demanded, is an offence under s. 6 of the Sale of Food and Drugs Act, 1875, and proceedings for the recovery of a penalty may be taken under that section.

Appeal allowed.

MASON *v.* COWDARY (Divisional Court),
2 Q.B. (1900) 419 ; 64 J.P. 662.

Adulteration—Camphorated Oil—Sample—Purchase for Analysis—Mode of Dividing Sample—Sale of Food and Drugs Act, 1875, s. 14.

Case stated by justices of the county of Bedford. The respondent had been summoned to answer an information under s. 6 of the Act for selling a certain drug—camphorated oil—which was not of the nature, substance, and quality demanded. The appellant purchased six twopenny bottles of camphorated oil from the respondent, who kept a a small general shop. The oil was exposed for sale in bottles, which were apparently not prepared by the respondent, for each bore the label of a neighbouring chemist upon it. At the time of the purchase the appellant divided the six bottles into three lots of two bottles each, sealing each separate lot of two bottles in a separate bag. The appellant then handed one of the sealed bags to the respondent, one he subsequently forwarded for analysis, and the remaining one he retained. The appellant did not open any or either of the bottles of camphorated oil or mix or divide their contents, but the two bottles in the sealed bag handed to the respondent were in exactly the same condition as when purchased. The public analyst's certificate of the analysis of the contents of the two bottles forwarded to him showed that the camphorated oil in those bottles contained 17½ per cent. of camphor, whereas it should have contained 20 per cent.

Held (Darling J. and Bigham J.), That when a purchase is made of several articles of food or drugs at the same time for the purpose of analysis, each article purchased must be divided into three parts, and otherwise dealt with as required by s. 14 of the Sale of Food and Drugs Act, 1875. When a purchase is made of six bottles of the same article of food or drug, each bottle is for the purposes of the Act a separate article, and it is therefore not a sufficient compliance with the requirements of s. 14 for the purchaser to divide them into three lots of two bottles each without opening any of the bottles, and to hand one lot to the analyst, one to the seller, and to retain one himself.

Appeal dismissed.

TYLER *v.* KINGHAM & SON, LIMITED (Divisional Court), 2 Q.B. (1900) 413; 64 J.P. 598.

Adulteration—Margarine—Sale to Prejudice of Purchaser—Defence that Article Bought with Written Warranty—Subsequent Proceedings against Wholesale Merchant—Certificate of Analyst—Evidence—Sale of Food and Drugs Act, 1875, ss. 6, 14, 21, 25—*Margarine Act*, 1887, ss. 6, 7, 12.

Case stated by justices of Middlesex sitting at Brentford. When, upon the hearing of a summons under s. 6 of the Sale of Food and Drugs Act, 1875, the defendant establishes the defence under s. 25 of the Act that he bought the article with a written warranty and sold it in the same state as when he purchased it, the certificate of the public analyst used in those proceedings is not evidence in subsequent proceedings before justices against the person from whom the defendant purchased the article.

Upon the hearing of a summons under the above section for selling as butter an article which was not of the nature, substance, and quality of the article demanded, the certificate of the public analyst showed the article sold to be margarine; the summons was, however, dismissed on the defendant, a retail grocer at Brentford, proving that the respondents delivered the article to him with an invoice and in a tub marked "Pure Butter," and that this amounted to a warranty given by the respondents that the article was butter. A summons was then taken out against the respondents under s. 6 of the Margarine Act, 1887, for delivering the margarine in a package not marked as required by the section, and at the hearing before the justices the same certificate was tendered as evidence against the respondents, but was rejected.

Held (Ridley J. and Bigham J.), That the certificate was not evidence against the respondents that the article sold and delivered by them was margarine, and that the evidence was properly rejected.

Appeal dismissed.

COMMON LODGING HOUSES.

LOGSDON *v.* TROTTER (Divisional Court), 1 Q.B. (1900) 617; 64 J.P. 421.

Common Lodging House—Liability to Penalty for Keeping—Charitable Institution—Common Lodging Houses Act, 1851—*Common Lodging Houses Act*, 1853, s. 3. — Sec. 3 of the Common Lodging Houses Act, 1853, provides that "a person shall not keep a common lodging house unless his name as the keeper thereof be entered in the register kept under the Common Lodging Houses Act, 1851."

The respondent kept a house in Whitechapel, London, for the reception of male lodgers which was not carried on for the sake of making a profit, but solely for the purpose of assisting the poorer classes. The lodgers were charged 6d. or 8d. a night, and for this each lodger got the use of a common dining hall and sitting room and the right to the exclusive occupation of a cubicle which contained

a bed, and which was separated from the rest of the dormitory by walls about 6½ feet high, made of tiles. A certain number of the lodgers were of a better class than the inhabitants of an ordinary common lodging house, but substantially the lodgers were of that description. Drunken and disorderly men, and men who were suspected of being criminals or verminous, were not admitted, but all other men were admitted on payment. The house had not been inspected and approved in that behalf by the local authority, and had not been registered as provided by the Common Lodging Houses Act, 1851.

On an information on behalf of the London County Council against the respondent for keeping an unregistered common lodging house, the magistrate dismissed the information, but stated a case.

Held (Channell J. and Bucknill J. . That since the inmates of the house were persons of the poorer class who were likely to be in a dirty and insanitary condition, and since they occupied at least part of the house in common, it was a common lodging house within the meaning of the Common Lodging Houses Acts, 1851 and 1853, and ought to have been registered. *Case remitted to the magistrates.*

DRAINS.

FROST *v.* VESTRY OF FULHAM (Divisional Court), 64 J.P. 629.

Drainage—Manholes—General Regulations issued by Vestry as to Drainage—Validity of—Metropolis Management Act, 1855, s. 76—*Metropolis Management Amendment Act*, 1862, s. 64.

The appellant on the 23rd of February, 1899, gave notice to the respondents under s. 76 of the 1855 Act, on a form supplied by the respondents of his intention to make certain drains to houses in Langford Road, Fulham. The form and accompanying plan were returned approved by the respondents. On the 2nd of August the respondents sent to the appellant a printed copy of "Regulations and directions of the vestry of the parish of Fulham as to drainage of houses and buildings, etc." By Rule 11 "there shall be provided in connection with the water siphon-trap a suitably constructed water-tight inspection chamber at least 3 ft. by 2 ft. internal measurement," and by Rule 12 a similar inspection chamber must be provided at the upper part of the drain. Later, the respondent's surveyor objected that certain inspection chambers being 2 ft. by 1½ ft. were not in accordance with the regulations.

Cooney, for the appellant, contended that the Vestry had not exercised their discretion as to the said inspection chambers with respect to the circumstances of each case, nor had they made an order in each particular case as required by s. 76 of the Act of 1855, but had applied only a general rule; further, that the drainage regulations aforesaid as to inspection chambers, were unreasonable and inapplicable to every case, and in excess of the powers of the Vestry. He cited *Wood v. Mayor of Widnes* (1897), 2 Q.B. 357; 61 J.P. 646, which was decided in accordance with *Tinkler v. Wandsworth Board of Works*, 27 L.J.,

Ch. 342 ; 22 J.P. 223 and *Greater London Property Co., Limited v. Foot* (1899), 1 Q.B. 972 ; 63 J.P. 420.

Held (Ridley J. and Bigham J.), That it was not necessary for the respondents to make a fresh regulation as to each particular case and that the general regulations must be complied with. *Appeal dismissed.*.

FARLOW *v.* STEVENSON (Court of Appeal) 1 Ch. (1900), 128.

Cost of Drainage Works required by Local Authority—Liability of Tenant—Landlord and Tenant—Covenant by Tenant to Pay and Discharge "all Taxes, Rates, Duties and Assessments payable in respct of the demised Premises"—Metropolis Management Act, 1855, s. 85—*Metropolis Management Amendment Act*, ss. 64, 96.

Upon a summons to determine whether, upon the true construction of a covenant contained in a lease of a messuage and premises granted by the plaintiffs to the defendant, the plaintiffs or the defendant were or was liable to pay the cost of drainage works done by the plaintiffs pursuant to notices from the Lambeth Vestry.

The lease contained a covenant by the defendant with the plaintiffs to pay the rent clear of all deductions, except property tax, and also to "pay and discharge all taxes, rates, duties and assessments whatsoever, which now are, or hereafter shall become, payable for or in respect of the premises hereby demised, or any part thereof, whether Parliamentary, parochial or otherwise, except the landlord's property tax."

The summons was heard before Byrne J. on March 7th, 1899.

Held (Lindley M.R., Romer L.J., and Sir F. H. Jeune), That under this covenant the tenant was liable to pay the cost of drainage works, the execution of which was required by the local authority under s. 85 of the Metropolis Management Act, 1855. Decision of Byrne J. affirmed.

Brett v. Rogers (1897), 1 Q.B. 525 and "Medical Annual" (1898) 590 approved.

ISLINGTON VESTRY *v.* HORNSEY (N.) DISTRICT COUNCIL (Court of Appeal), 1 Ch. (1900) 695.

Drainage and Sewerage—Metropolitan Drainage System—Agreement to admit Foreign Sewage—Public Body—Injunction—Ultra Vires—Estoppel—Laches and Acquiescence—Metropolis Management Act, 1855, ss. 135, 138, 140, 250—*Metropolis Management Amendment Act*, 1862, s. 61.—Appeal from a decision of Kekewich J. The object of the action was, in substance to compel the defendants to disconnect some sewers in their district from a sewer in the Stroud Green Road, North London, and to restrain the defendants from permitting any future connection of drains or sewers in their district with the said Stroud Green Road sewer.

Under s. 61 of the Metropolis Management Amendment Act, 1862, the vestry of a parish within the Metropolitan area cannot, even with the consent of the London County Council, enter into a binding agreement to receive sewage from a district without the Metropolitan area.

The reasoning of Hall, V.C., in *Metropolitan Board of Works v. London and North Western Railway Company* (1880), 14 Ch. D. 521 ; (1881), 17 Ch. D. 246 approved. When the plaintiffs, the vestry of a parish within the Metropolitan area, made an arrangement with certain landowners of a district without the metropolitan area (now represented by the defendants, the Urban District Council) whereby the discharge of some sewage from the defendants' district into a sewer belonging to the plaintiffs had been permitted for many years, and this additional sewage had increased so as periodically to choke up the plaintiff's sewer.

Held (Lindley M.R., Rigby and Vaughan-Williams, L. JJ.), That this arrangement operated in law merely as a revocable license, and that the plaintiffs, being a public body with public duties to perform, were not esstopped or precluded by laches or acquiescence from bringing an action for an injunction to restrain the defendants from using the sewer ; but

Held, That, having regard to the conduct of the plaintiffs and to the difficulty in which an injunction would place the defendants by compelling them to close their sewers, the Court ought only to make a declaration that the defendants were not entitled to send sewage from their district into the plaintiffs' sewer without the consent of the plaintiffs. *Appeal allowed. Judgment of Court below reversed.*

MEDICAL PRACTITIONER.

OSBORN *v.* VICKERS, SONS AND MAXIM (Court of Appeal) 2 Q.B. (1900) 91.

Examination of Workman by Medical Practitioner—Right of Employer to—Employer and Workman—Notice of Accident not given—Workmen's Compensation Act, 1897, s. 2 ; First Schedule, s. (3).—Appeal from a decision of the Leeds County Court Judge. The respondent, Osborn, a workman who sustained an injury from an accident in the employ of the appellants, gave no notice of his injury to his employers, and received a weekly allowance from his employers ; but as the medical man employed by the firm advised that he had completely recovered from the effects of the injury, the firm ceased the weekly payments. The respondent filed a request in the County Court for arbitration to assess the compensation ; to this the appellants made answer that the respondent had quite recovered, and required him to submit himself to an examination by a medical man employed by them under the First Schedule s. (3) of the Act. This the respondent refused unless the appellants would pay a guinea for the attendance of a medical man on his behalf in addition to the appellants' medical man—which they refused to do.

On the hearing the case was adjourned by the Judge, who ordered that the respondent submit himself for medical examination, and that the appellants should pay the fee of one guinea for the attendance at the examination of a medical practitioner on the respondent's behalf.

Held (Collins, Vaughan-Williams and Romer, L.JJ.), That, al-

though the workman had not given notice of the accident, the employers were entitled to require him to submit himself for medical examination in pursuance of s. (3) of the First Schedule to the Act; and that the county court judge had no jurisdiction to impose any term upon them as a condition of the workman's being bound to do so.

Appeal allowed.

NUISANCES.

BARSHT *v.* TAGG, 1 Ch. (1900) 231.

Nuisances—Abatement—Public Health (London) Act, 1891—*Vendor and Purchaser—Conditions of Sale—"Outgoings"—Notice by Sanitary Authority to abate Nuisance.*—Conditions of sale of leasehold houses provided that the purchase should be completed on August 11th, 1898, and that "a purchaser paying his purchase money is, as from that day, to be let into possession or receipt of rents and profits, and up to that date rents, rates, taxes, and outgoings are (if necessary) to be apportioned, and such apportioned rent shall be paid on completion by each purchaser to the vendor. If, from any cause whatever, other than wilful default on the part of the vendor, the completion of the purchase money is delayed beyond the before-mentioned day, the remainder of the purchase money is to bear interest at the rate of £6 per cent. per annum from that day to the day of actual payment thereof, or, at the option of the vendor, he may receive the rents and profits up to the day of the actual completion of the purchase. The property shall, as from the day of sale, be at the sole risk of the purchaser, and the vendor shall not incur any liability by reason of its then or subsequently becoming or remaining un-tenanted, un-insured, or deteriorated." Through default of the plaintiff, who had purchased one of the lots, his purchase was not completed on August 11th, although the title had then been accepted, and the defendant, the vendor, remained in possession. In November, 1898, notices were served on the defendant as "owner" by the Vestry of St. Matthew, Bethnal Green, under the Public Health (London) Act, 1891, to abate nuisances on the property, and the cost of making the abatement, about £24, was paid by the defendant. In February, 1899, the plaintiff was ready to complete, and offered to pay interest at 6 per cent. on the balance of the purchase money from August 11th on receiving the rents and profits from that date, and in that case to repay the £24, but he insisted that if the defendant retained the rents and profits he ought to bear the cost of the abatement.

Held (Cozens-Hardy, J.), The £24 being an outgoing (*Tubbs v. Wynne* [1897] 1 Q.B. 74) which from the time when a good title was shown must clearly be borne by the purchase in the absence of express stipulation, the plaintiff would as from August 11th have been entitled to the rents and profits and liable to pay the £24, if the conditions had not given the vendor the option to keep the rents and profits in lieu of interest, but that there was nothing to relieve the plaintiff from the obligation to pay the outgoings, and that he could only obtain specific performance on paying the £24, and the balance of his purchase money.

POISONS.

PHARMACEUTICAL SOCIETY *v.* WHITE (Divisional Court), 1 Q.B. (1900) 455; 64 J.P. 168.

Poisons—"Seller"—Order taken by Agent—Pharmacy Act, 1868, s. 15.—Appeal from a decision of the judge of the Worcester County Court. The action was brought by the Pharmaceutical Society to recover from the defendant a penalty of £5 under s. 15 of the Pharmacy Act, 1868, for having sold, or kept an open shop for retailing, poisons, not being a duly registered chemist.

Sec. 15 of the Pharmacy Act, 1868, imposes a penalty upon any person "who shall sell" poisons without being duly qualified. The defendant, who kept a florist's shop at Worcester and was not duly qualified to sell poisons, took from one of his customers an order for a "weed-killer," manufactured by a limited company at Liverpool and containing poison. The defendant did not keep any of the weed-killer in stock; but, in accordance with his usual practice, took the order, received from the customer the price of the quantity ordered, gave him a receipt, and forwarded the order to the company at Liverpool, who thereupon supplied the customer with the weed-killer. The defendant received from the company a commission of 25 per cent. in respect of all sales effected on orders sent to them by him.

The County Court Judge found as fact, on the evidence, that the defendant was not the person who had the conduct and management of the sale to the customer. The judge, therefore, held that the defendant had not committed any breach of the provisions of the Pharmacy Act, 1868, and gave judgment for him.

In an action for a penalty under s. 15:—

Held (Grantham J. and Channell J.), That there was evidence to support a finding that the defendant was not the person who had the conduct and management of the sale, and, therefore, that he was not the seller of the poison within the meaning of the Act.

Appeal allowed.

RIVER POLLUTION.

RIVER RIBBLE JOINT COMMITTEE *v.* HALLIWELL.

THE SAME *v.* SHORROCK (Court of Appeal). 2 Q.B. (1899) 385.

River Pollution—"Putrid Solid Matter"—Lawful Exercise of Right to Impound or Divert Water—Rivers Pollution Prevention Act, 1876, ss. 2, 17, 20.—Appeals from the judgment of a Divisional Court (Lord Russell of Killowen C.J. and Wills J.) dismissing appeals from the decision in two cases of the judge of the Blackburn County Court. Sect. 2 of the Rivers Pollution Prevention Act, 1876, prohibits the putting or causing or knowingly permitting to be put, or to fall into any stream, so as to pollute its waters, "any putrid solid matter," and by s. 20 of the Act, "solid matter" shall not include particles of matter in suspension in water. By s. 17 the Act "shall not apply to or affect the lawful exercise of any rights of impounding or diverting water."

The defendant owned weaving sheds, worked by steam power, on the bank of a river, and he had for the purposes of his business, for many years prior to the passing of the Act, lawfully exercised the right of diverting water from the river by means of a goit and dealing with the same in the following manner. The water so diverted being full of substances discharged into the streams from paper manufactories, not belonging to the defendant for the purposes of his business, to be impounded in a reservoir and allowed to settle. Whilst it was so impounded, the substances contained therein sank to the bottom, and, after about three days, became putrescent in the form of sludge. The water at the top when thus cleared was taken from the reservoir and used for condensing and boiler purposes. Once a week the reservoir was cleared by opening the sluice-gates into the river, and allowing the water to flow through the reservoir and out into the stream, carrying with it the sludge deposited in the reservoir. The effluent water as it went into the stream through the sluice-gates contained 97·6 per cent. of water and 2·4 per cent. of solid matter.

Held (A. L. Smith and Rigby L.JJ.), That the solid matter when it entered the stream from the reservoir was "in suspension in water" within the meaning of s. 20, and therefore not "solid matter" within s. 2 of the Act (affirming the decision of Lord Russell of Killowen C.J. and Wills J.).

Held, also (A. L. Smith, Rigby and Vaughan-Williams L.JJ.), That assuming that what was put into the stream was "solid matter" within the meaning of s. 2, the defendant was protected by s. 17, and therefore not liable to be proceeded against under the Act.

Appeal dismissed.

SANITARY CONVENIENCE.

BENNETT *v.* HARDING (Divisional Court),

2 Q.B. (1900) 397 ; 64 J.P. 676.

Sanitary Convenience—Work Place—Persons in Attendance—Public Health (London) Act, 1891, s. 38.

Case stated by a metropolitan police magistrate. Sec. 38 of the Public Health (London) Act, 1891, enacts that every factory, workshop, or work place shall be provided with sufficient and suitable accommodation in the way of sanitary conveniences, regard being had to the number of persons employed in or in attendance at such building.

The case stated that the premises in question consisted of ten stables, and a stable-yard, and were in the occupation of the respondent, who is a cab proprietor. The respondent kept 110 horses and a large number of cabs, and employed upon the premises a number of men as horse keepers and cab cleaners. The cab drivers were daily in attendance at the premises for the purpose of hiring the horses and cabs, changing horses, and returning the horses and cabs after use. The horse keepers and cab cleaners when not at work lived with their respective families in different rooms, having sanitary conveniences,

situated over different portions of the premises. In the stables and stable-yard there was no accommodation in the way of sanitary conveniences for the horse keepers and cab cleaners. Many complaints as to this want of sanitary conveniences had been made to the appellant and the Holborn Board of Works.

The magistrate dismissed the complaint, as he was of opinion that the premises were not a work place *ejusdem generis* with a factory or workshop, and further, that the cab drivers were only in attendance as customers, and that there was no duty thrown upon the respondent to provide sanitary conveniences for them.

Held (Grantham J. and Channell J.), That a stable-yard and stables at which a large number of cabmen were daily in attendance for the purpose of hiring cabs was a work place within the meaning of the section and must, therefore, be provided with sufficient and suitable sanitary conveniences for the cabmen. *Appeal allowed.*

SEWERS.

BROWN *v.* DUNSTABLE CORPORATION (Mr. Justice Cozens-Hardy), 2 Ch. (1899) 379.

Sewers—Discharge of Sewage on to Private Lands—Nuisance—Claim of Right for Inhabitants of a Parish—Injunction—Prescriptive Right in Third Parties to drain into Sewers—Power of Sanitary Authority to stop existing and future Connections with Sewers—Public Health Act, 1875, ss. 21, 299.—In an action by Major Brown, the owner in fee of Dunstable Park, and his tenant, Henry Brown, against the Corporation of Dunstable (the Urban Sanitary Authority for the borough of Dunstable) for an injunction to restrain them from discharging or allowing to be discharged sewage upon his lands from the sewers vested in them so as to cause a nuisance, the defendants set up a prescriptive right based on the presumption of a lost grant by the plaintiff's predecessors in title to trustees for the benefit of the inhabitants of the borough to drain all sewage from any tenements built or to be built within the borough, and to discharge the same on the plaintiff's lands. This claim of right failed. It was proved, however, that there were a number of houses within the borough in respect of which prescriptive rights had been acquired to pass sewage into and along the sewers, and that there were other houses the connections of which with the sewers had been made with the consent or by the acquiescence of the defendants.

Held, That an injunction could not be granted so as to interfere with the prescriptive rights that had been acquired, nor to oblige the defendants to stop up the connections of the other houses which they had sanctioned: but that an injunction must be granted to restrain the defendants from authorising or directing any sewage to flow or be discharged on to the plaintiffs lands from sewers vested in them as the sanitary authority.

Attorney-General v. Acton Local Board (1882), 22 Ch.D. 221, and *Attorney-General v. Clerkenwell Vestry* (1891), 3 Ch. 527, *followed.*

Held, also, following *Ainley v. Kirkheaton Local Board* (1891), 60 L.J. (Ch.) 734, That a householder has an absolute right under s. 21 of the Public Health Act, 1875, to connect his drains with a sewer, subject only to the regulations prescribed by the local authority in whom the sewer is vested as to the manner in which the connections are to be made, and therefore an injunction could not be granted to restrain the defendants from allowing any future connections to be made with their sewers.

Charles v. Finchley Local Board, (1883), 23 Ch.D. 767, *dissented from on this point.*

Held, further, that the plaintiff ought to have applied to the Local Government Board, under s. 299 of the Public Health Act, 1875, to make an order on the defendants to adopt a proper system of sewage for their district. *Defendants to pay costs of the action.*

KINSON POTTERY CO. *v.* POOLE CORPORATION (Divisional Court, 2 Q.B. (1899) 41.

Sewers—Nuisance by Sewage—Drainage of House—Want of Structural Convenience—Liability of Owners—"Drain"—"Sewer"—Public Health Act, 1875, ss. 4, 13, 15, 21, 94, 95.

Case stated by justices for the borough of Poole. The appellants were summoned by the sanitary authority of the borough of Poole for non-compliance with a notice to abate a nuisance caused by turning slop and scullery water from twelve houses owned by the appellants, into a drain constructed by a highway to receive the surface water of the highway, which emptied into an open ditch. According to the plan deposited with the sanitary authority when the houses were built by the appellant's predecessor in title, the houses should have been drained into cesspools, but cesspools to receive the slop and scullery water had not been constructed. No sewer had been constructed by the sanitary authority, by means of which the houses could be drained. The houses were separately occupied, and were not within the same curtilage. The justices made an order to abate the nuisance, by disconnecting the drains of the houses from the surface-water drain, and making cesspools for the houses.

Held (Darling J. and Channell J.), That the sanitary authority were not bound, under the Public Health Act, 1875, s. 15, to provide a sewer to drain the appellant's houses; that the surface-water drain, though, for some purposes a "sewer," within the meaning of s. 4, was not a sewer into which the appellants were entitled to empty their drains, that the nuisance was caused by the want of a structural convenience, within the meaning of s. 94, and therefore the defendants, as owners, were liable. *Appeal dismissed.*

EASTWOOD BROS. LIMITED *v.* HONLEY N. COUNCIL (BYRNE, J.), 1 Ch. (1900) 781.

Sewers—Prescriptive Right of Drainage—Trade Effluents—Polluting Liquid—Public Health Act, 1875, ss. 17, 21—*Public Health Acts Amendment Act*, 1900, s. 17, sub. s. 1—*Rivers Pollution Prevention Act*, 1876, ss. 4, 7, 16—*West Riding of Yorkshire Rivers Act*, 1894, ss. 9, 10.—The defendant council, being advised that the discharge of the trade effluent from Thirston Mills, the plaintiffs' property, into their sewer was, on account of its temperature and for other reasons, prejudicially affecting the disposal of the sewage matter and exposing them to liabilities under the Rivers Pollution Prevention Act, 1876, had recently informed the plaintiffs of their intention to cut off the connection between the sewer and the drains from Thirston Mills.

The plaintiffs accordingly commenced this action, claiming an injunction to restrain the defendants from disconnecting the drains in accordance with their threat.

When the owners of buildings have acquired a right to discharge drainage into a public sewer through a connection lawfully made, that right extends to the discharge of trade and manufacturing effluents, and the provision of s. 7 of the Rivers Pollution Prevention Act, 1876, do not justify a local sanitary authority in cutting off the connection with their sewer, even although it is shown that the discharge of the trade effluent prejudicially affects the disposal of the sewage matter conveyed through the sewer.

The decision of Charles J. in *Peebles v. Oswaldtwistle Urban Council* (1897), 1 Q.B. 384, and "Medical Annual" (1898), 595, on this point followed. *Injunction granted.*

REG. *v.* LONDON COUNTY COUNCIL (Court of Appeal), 64 J.P. 20.

Sewers—Effectual Drainage of District—Discretion—Nuisance—Due Care—Mandamus—Metropolitan Management Act, 1855, s. 135.—Sec. 135 of the Metropolitan Management Act, 1855, provides that when the necessity has arisen to execute works for the effectual drainage of a district, it is the duty of the London County Council to execute works for the purpose of draining the district, and that duty will be enforced by mandamus. The words "such sewer as they from time to time think necessary" only give a discretion as to the kind of works which shall be executed. The sewage in a sewer vested in the Council has escaped into the local sewers of the Lee Board of Works and caused a nuisance.

An appeal of the London County Council from an order of the Queen's Bench Division (Grantham J. and Kennedy J. dissenting) making absolute a rule *nisi* for a mandamus commanding them to consider and determine whether they think any, and, if so, what sewers or other works referred to in the Metropolitan Management Act, 1855, s. 135, are necessary for the effectual drainage of that part of the Metropolis which is situate in the parish of Charlton, and to make such sewers or works, if any, as they may think necessary, and further commanding them to cause as much of the "southern outfall

main sewer" as runs through the parish of Charlton to be kept so as not to be a nuisance or injurious to health.

Held (A. L. Smith, Collins and Vaughan-Williams, L.JJ.), That all due care or diligence had not been used, and that a *mandamus* should issue commanding the London County Council to keep so much of the sewer as runs through the district so as not to be a nuisance.

Appeal dismissed.

SYKES *v.* SOWERBY N. D. COUNCIL (Court of Appeal),

1 Q.B. (1900) 584; 64 J.P. 164 and 340.

Sewers—Vesting in Local Authority—"Sewers made by any Person for his own Profit"—Public Health Act, 1875, s. 13, sub. s. 1.—Appeal from the judgment of a Divisional Court reported (1899), 1 Q.B. 979, and "Medical Annual" (1900), 640. A drain was made by the owner of a quarry for the purpose of collecting and carrying off surface water coming on to his land and preventing it from running over the quarry. By means of the drain the quarry could be more economically and conveniently worked than if the water were allowed to spread over it.

Held (A. L. Smith, Collins, and Romer L.JJ.), That the drain was a sewer made by a person for his own profit within the meaning of s. 13, sub. s. 1, of the Public Health Act, 1875, and did not vest in the local authority of the district.

Decisions of the Queen's Bench Division (1899), 1 Q.B. 979 reversed.

Croysdale v. Sunbury-on-Thames Urban Council (1898), 2 Ch. 515 approved.

BARON & ANOTHER *v.* PORTSDALE N.D. COUNCIL (Court of Appeal),

2 Q.B. (1900); 588, 64 J.P. 675.

Sewers—Duty of Local Authority to Cleanse Sewers—Public Health Act, 1875, ss. 15, 19, 299.—Appeal from a judgment of Matthew J. on further consideration, reported in 63 J.P. 726, and "Medical Annual" (1900), 639. The plaintiffs were occupiers of a dwelling-house and land at Portsdale. The action was brought to recover damages for trespass to their land, and injury to them in their occupation of such owing to the negligence of the defendants in not keeping in a proper state certain drains and sewers vested in them, and the jury assessed the damages caused to the plaintiffs by the negligence of the defendants at £75.

On further consideration the learned judge held that there was evidence of negligence; that s. 299 of the Public Health Act, 1875, in dealing with the maintenance of sewers, does not apply to the duty of cleansing sewers imposed by s. 19 of the Act upon the local authority in whom they are vested; and consequently did not deprive the plaintiffs of their right of action against the defendants as local authority; and he gave judgment for the plaintiffs for the amount of damages assessed by the jury. The defendants appealed.

Held (Earl of Halsbury, L.C., A. L. Smith and Vaughan-Williams,

L.JJ.). Sec. 299 of the Public Health Act, 1875, in providing for complaint to the Local Government Board where a local authority has made default in the maintenance of existing sewers, does not apply to s. 19 of the Act, which imposes on local authorities the duty to cleanse sewers vested in them, and consequently does not affect the right of action of a person who has sustained damage through the negligence of a local authority in not cleansing a sewer vested in them.

Appeal dismissed.

UNSOUND FOOD.

THOMAS *v.* VAN OS. (Divisional Court),
2 Q.B. (1900) 448; 64 J.P. 582.

Unsound Food, Destruction of—Duty of Magistrate—Public Health (London) Act, 1891, s. 47.

Case stated by a metropolitan police magistrate, who had dismissed an application, under s. 47 of the Public Health (London) Act, 1891, for an order condemning certain strawberries as unsound.

From the information it appeared that the appellant had seen a van containing 117 tubs of strawberries in Limehouse, which, in his opinion, were unsound, unwholesome, and unfit for the food of man. The respondent was a general merchant, and had a contract with a grower in Holland to send him strawberries daily. He wired for three tons to be sent by the Sunday's boat from Rotterdam, and had given instructions to collect them at Bishopsgate Street Station, and take them to John Moir, Limited, to sell them. The respondent, who had seen the strawberries in the station yard, admitted they were unsound and unfit for food. It appeared that the manager of John Moir, Limited, refused the fruit because of the condition.

The learned magistrate refused to condemn the fruit because (1) he found no evidence that the fruit at the time of the seizure was intended for food, or was exposed or deposited for sale; (2) consequently he had no jurisdiction.

Held (Ridley J. and Bigham J.), When proceedings are taken before a magistrate under s. 47 of the Public Health (London) Act, 1891, for the condemnation as diseased, or unsound, or unwholesome, or unfit for the food of man, of an article seized by a medical officer of health, or sanitary inspector under the provisions of that section, the magistrate has no jurisdiction to enquire whether the article was intended for the food of man, but is bound to order its destruction upon being satisfied that it is in fact diseased, or unsound, or unwholesome, or unfit for the food of man. *Appeal allowed.*

VACCINATION.

OVER *v.* HARWOOD (Divisional Court),
1 Q.B. (1900) 803; 64 J.P. 326.

Vaccination Order—Non-compliance with Order—Burden of Proof—Vaccination Act, 1867, s. 31.

Case stated by justices for the county of Surrey. The appellant having omitted to carry into effect an order made pursuant to s. 31 of

the Vaccination Act, 1867, to have his child vaccinated within twenty-eight days, an information was preferred against him that though the said period had expired the said child had not been vaccinated, nor shown to be unfit to be vaccinated, nor to be insusceptible of vaccination.

Upon the hearing of the case, the respondent produced the order, and deposed upon oath that he had not received any certificate that the child was successfully vaccinated, neither had he received any certificate that the child was unfit to be vaccinated nor to be insusceptible to vaccination. He admitted he had never seen the child the subject of the information. He also produced and submitted the register of vaccinations kept by him pursuant to s. 24 of the Vaccination Act, 1867. It was contended on behalf of the appellant that the evidence given by the respondent was not sufficient proof that the appellant was guilty of the alleged offence. For the respondent it was contended that the evidence was sufficient proof that the appellant had not complied with the order.

Held (Channell J. and Bucknill J.), Upon the hearing of a summons under s. 31 of the Vaccination Act, 1867, against the parent of a child for non-compliance with an order of justices directing him to have his child vaccinated, the burden of proving non-compliance is upon the prosecution. Evidence that the certificate of vaccination required by the Act had not been received by the proper officer is *primâ facie* evidence from which non-compliance with the vaccination order may properly be presumed. *Appeal dismissed.*

THE EDITOR'S TABLE.

A Review of New Inventions, and Pharmaceutical and Dietetic Articles.

MEDICAL AND SURGICAL APPLIANCES.

Aseptic Dredger. *Bertram Crossfield Steven, B.S., M.R.C.S.*

It has struck me that the whole procedure of an aseptic operation, or an aseptic dressing of a wound, breaks down when the surgeon who wishes to dust on some antiseptic powder, takes hold of a septic bottle or tin for that purpose. After the powder has been dusted on, the surgeon, with surgically unclean hands, may require to unravel a strip of gauze for packing, or to cut a square of gauze to lay over a wound.

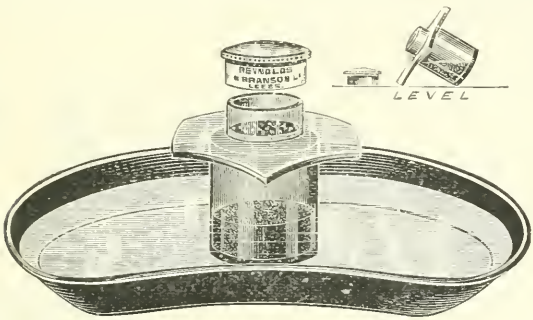


Fig. 46.

To obviate this I have devised a dredger made of celluloid, which is light, transparent and can easily be rendered aseptic. It is so made as to stand with safety in a basin of antiseptic lotion of shallow depth, also to keep in position by its own buoyancy if floated in a deeper basin of lotion (*Fig.* 46).

The projecting rim is to keep water from the surgeon's wet hand or the basin from damping the powder inside. The rim also keeps the head of the bottle above water, should it get upset. Reynolds and Branson, Leeds, are the manufacturers.

[We have carefully tested this appliance and we find that it in every way fulfils the intentions of its inventor, and is a most valuable addition to aseptic surgery. It is excellently made.—EDITOR.]

Aural Syringe.—Mr. Frank A. Rogers (327, New Oxford Street, W.) sends us a glass syringe with wide stem and very fine nozzle for aural work (*Fig.* 47). The fineness of the jet renders it possible to remove cerumen with the use of less water than the ordinary syringe which gives a wider stream. It is a simple and inexpensive appliance, and would prove useful for other purposes.

Fig. 47.

Bandage.—Under the name of the "Isdonia," the Galen Manufacturing Co. (Limited), of Ladywell, London, S.E., have introduced a bandage which possesses considerable elasticity without containing any india-rubber. The material is thin and porous and we believe will prove more suitable for irritable varicose veins, when elastic stockings can not be tolerated, than any bandage that has yet been produced. For all ordinary purposes of retaining dressings we like the bandage, as it gives firm support without the feeling of tightness of an elastic bandage.

Belt for Floating Kidney.—We here illustrate a belt for floating kidney (*Fig.* 48) which gives the most perfect support to the abdominal muscles in addition to the special pad which retains the kidney in its place. In all cases of floating kidney it is necessary to give a general support to the abdominal organs in addition to the kidney, and this belt well fulfils this indication and can be safely recommended to patients. Made by the Domen Belts Co., 456, Strand, W.C.

FLOATING KIDNEY

Fig. 48.

Clover's Ether Inhaler.—Mr. Frank Rose, of Bristol, alters Clover's inhaler by using a glass ether chamber closed at either end by a light metal dome; this allows the operator to see the quantity of ether present at any time. He dispenses with the hot-water jacket, reducing weight to 8¼ ounces. Messrs. Mayer & Meltzer make this form.

Messrs. Geo. Barth & Co., 54, Poland Street, W., improve Clover's inhaler by making the bag capable of being turned inside out, which is convenient for cleansing purposes. They also add an arrangement by which the amount of ether in the bottle is indicated.

Messrs. Allen and Hanburys also make a glass dome to the ether chamber and have applied for a patent for it.

Destructive Poison Bottle (*Fig.* 49).—This bottle is just unlike any other bottle. It suffers from torticollis and is pigeon-breasted. This is to indicate that the bottle contains poison, and when it becomes

generally used the public will learn to connect the shape with the contents. Until they do it would be as well if the bottle had the word "*Poison*" printed so distinctly that it could not avoid being seen. These words stand in relief upon the glass of the bottle, but it would require colour to give them distinctness. Still, it is a step in the right direction, and the fact that the neck is on one side is an advantage as it prevents any dripping from running down the sides of the bottle. Messrs. Reynolds & Branson, Leeds, are the manufacturers.

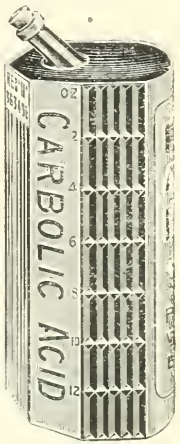


Fig. 49.

Dry Hot Cushions.—The use of dry heat is valuable for soothing pain and allaying inflammation. There are times when a hot water bottle or hot sand bag is a precious thing to the sufferer; there are also times, especially in abdominal cases, when he would like its heat without the weight of the hot water bottle. Mr. J. H. Haywood, of Nottingham, has furnished such an appliance in the form of a cushion covered with asbestos cloth, which can be baked in an oven, and then covered with a red flannel bag, and applied. It will retain its heat for some hours and is quite light. A couple of these would give the best result—one on and the other in the oven. It is a simple way of maintaining the heat of compresses and poultices where moist heat is indicated. We regard this simple appliance as a distinct addition to our resources.

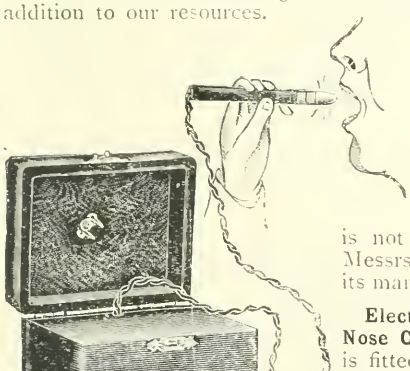


Fig. 50.

Ear Syringe (Heath's).—In this syringe there is a secondary tube of larger calibre than that used for injecting the water into the ear. This comes into use when filling the syringe and expedites the operation. It undoubtedly saves time and is not likely to get out of order. Messrs Maw, Son, & Thompson are its manufacturers.

Electric Lamp for Throat and Nose Cases (*Fig.* 50).—A tiny lamp is fitted to the end of a rod, and a brilliant light is given on touching a spring. The light can thus be introduced into the throat, so that an accurate examination can be made under conditions when it would be impossible to secure a good

illumination of the throat. The whole appliance is contained in a box about 4 × 3 inches square, so that it is very portable.

The lamp being only lighted for a minute or so at each examination, will last for a considerable time, as we have found by practical experience. When the cells are exhausted, it is only necessary to drop the new ones into the box; they require no fixing, as by an ingenious arrangement they connect themselves. The new cells for recharging cost a very nominal sum. This lamp finds its most important use when visiting patients in their own houses, but we have found it also of great convenience in our consulting room to examine patients where they are sitting without asking them to move to where the light is arranged for such examination. It costs 21s.; for five-candle power 30s. Messrs. R. Sumner & Co., of Liverpool, have brought this under our notice.

Feeding Bottle Bags.—These are intended to maintain the heat of the feeding bottle for four or five hours. They are constructed on the same lines as the "Dry Hot Cushions" (which see) by Mr. J. H. Haywood, of Nottingham. Muff and Foot Warmers are made on the same principle.

First Field Dressing.—Messrs. Cuxson, Gerrard & Co., of Oldbury, send us a sample of a first field dressing as supplied to the government for soldiers at the seat of war. It is in precise accordance with the government regulations, and is supplied to the medical profession at 6s. per dozen.

First Aid Outfit.—In a neat little box, we have all those things which may be required for dressing an ordinary wound or for rendering first aid in any surgical emergency. There are cotton wool, double cyanide gauze, roller bandages of varied sizes, a triangular bandage, lint, oiled silk, boracic ointment, self-adhesive plaster and tablets for preparing antiseptic solutions. This is just the thing which might be left in every household with advantage. The quantities given of each are ample; the cost of the whole is 5/-. Messrs. Ferris & Co., of Bristol.

Frænum Scissors.—These are invented by Mr. E. R. Haines Cory

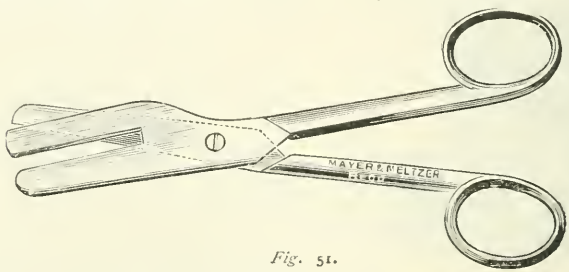


Fig. 51.

with a view to rendering it safer to cut the frænum linguæ without wounding the lingual arteries (*Fig.* 51).

The lower blade of the scissors is half an inch in breadth with a slot down the centre. The operator holds the scissors so that the frænum falls into this slot when the upper blade, on the scissors being closed, divides it. Messrs. Mayer & Meltzer are the manufacturers.

Gigle's Saw.—This is a flexible band of steel serrated upon one edge, with a couple of handles which can be fixed after the saw has been placed *in situ*. It enables a bone to be rapidly sawn through in positions which could not be attacked by the ordinary saw. Messrs. Maw, Son, & Thompson are the manufacturers.

Horse-shoe for Colostomy (*Fig.* 52).—Dr. Hamilton Whiteford prefers this shape to the straight metal or glass tube usually employed. It has obvious mechanical advantages and is more easily kept in position. Messrs. Reynolds and Branson, of Leeds, have manufactured this appliance in German silver, in accordance with the inventor's wishes, and it can be obtained for 2s. 6d.

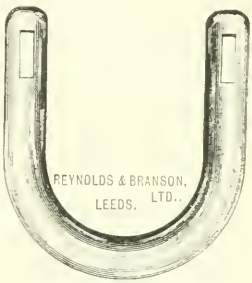


Fig. 52.

Hypodermic Syringe (Aseptic).—Messrs. Maw, Son, & Thompson send us a hypodermic syringe made wholly of metal (including the piston). We called attention to the advantage of this form of syringe in the "Medical Annual," 1895.

Ichthyol Plaster.—The Ichthyol Co. have introduced a very elegant plaster corresponding to "Court Plaster," but it is much thinner and adheres better. We tried some on a wounded finger, and although the hand was washed many times a day, the plaster remained *in situ*. This is the best court plaster we have seen. To be obtained from Gustav Hermanni, Junr., 20, High Holborn, W.C.

Label Book.—Messrs. R. Sumner & Co., of Liverpool, have produced a book in which the names of all the principal drugs are printed in large letters, with the dose. Each name is perforated and gummed on the back, so that it is only necessary to tear it out and gum on the bottle. It is just the thing for those who dispense their own medicines when the labels on the dispensing bottle have got shabby or indistinct. The cost of the book with 240 labels is 1 -.

Ligatures.—The Galen Manufacturing Co., Ladywell, S.E., are sending out ligatures wound on a spool and enclosed in a wide-mouthed bottle containing antiseptic fluid. This is simple, and more practical than some of the more complicated arrangements we have seen.

Lignola (Protective).—This is an extremely interesting novelty. It is intended to take the place of oiled silk and gutta-percha tissue as a protective, and has nothing in common with either. It is made from strong wood fibre and resists the action of oils, alcohol, carbolic

acid, hot water, etc. We have carefully examined it and we consider that, under all circumstances where it is not exposed to being folded upon itself, it will answer every purpose for which protectives are used, and this is important because its cost is very much less than any other protective. Supplied in boxes containing 6 and 12 yards at 4s. per dozen yards, its width being 22 inches. It is made by Cuxson, Gerrard & Co., Oldbury.

Menthol Inhaler.—This is perhaps the simplest and most efficient way of obtaining the effects of menthol in throat cases. The crystals of menthol are put into a glass tube, one end of which possesses a mouth-piece, and the air is drawn over them as it is inhaled. Sent out enclosed in a metal case, which is very convenient for the pocket (*Fig.* 53). The cost is 8s. 6d. per dozen. Messrs. R. Sumner & Co. are the manufacturers.

Fig. 53.

Mosetig Battist.—This is a thin waterproof material, very soft and flexible, and excellent for covering dressings and compresses. It is made by the Galen Manufacturing Co., Ladywell, S.E.

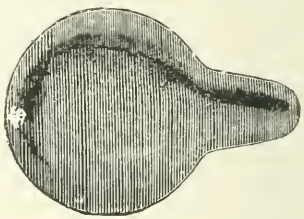


Fig 54.

Nasal Syringe.—This is a simple india-rubber ball having a projection in the rubber to fit the nares (*Fig.* 54). Being all in one piece it is not possible for it to get out of order. It is inexpensive and practical. Mr. Frank A. Rogers, 327, New Oxford Street, is the manufacturer.

Needle Box.—This needle box (*Fig.* 55), which measures 3 in. in diameter, is so constructed that different shaped needles can be kept separate. It is made in metal, blocked out and nickel plated, thus rendering it sterilisable by dry heat. In order to protect the points, a layer of asbestos cloth is placed at the top and bottom. The lid is held on by means of bayonet catches. It is excellently made by Messrs. Reynolds & Branson, of Leeds.

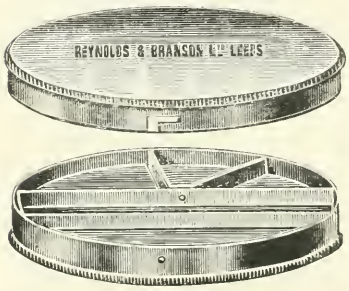


Fig. 55.

Paper Dredger.—This is a circular cardboard box about 2½ inches in length, so made that it makes

an excellent dredger for dusting purposes. It is intended for dispensing purposes, and as the cost is only 1/- per dozen it should have a large sale, as something of the kind has been sadly wanting. Messrs. R. Sumner & Co., of Liverpool, sent us this novelty.

Fig. 56.

Powder Duster (Triple).—A little tube, the diameter of which is not much larger than a shilling and only 3 inches in length, is so arranged that it will hold three different dusting powders and either of them can be dusted on a wound at will, by simply turning the lid to the required point. It is a neat little contrivance, well adapted for carrying in the surgical bag. There is no other article of the kind which will give us three dusting powders in such a compact form. It comes to us from Messrs. Ferris & Co., of Bristol, and costs 5s.

Pulsometer and Pencil Case (combined).—This is a little pulsometer (*Fig.* 56), placed in a pencil case, so that the means are afforded the nurse of not only taking the pulse but recording it. It only costs 2/3, and is very useful. Messrs. Reynolds and Branson, of Leeds, supply it.

Ralston Still.—This is an apparatus (*Fig.* 57) for the production of distilled water, for domestic or hospital use. It produces from one to three quarts per hour according to the amount of heat used. It costs 42s. The apparatus is simple in construction and should prove very useful for patients who are required to drink distilled water, and this order of the physician might be given much more frequently than it is to patients suffering from the uric acid diathesis with very great advantage. Messrs. Allen and Hanbury (Limited), 48, Wigmore Street, W., are its manufacturers.

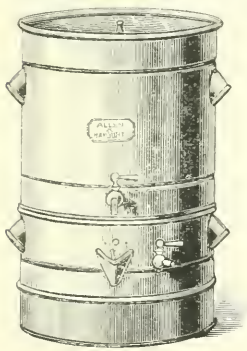


Fig. 57.

Rectal Speculum (Sims').—This is undoubtedly a most practical speculum for rectal examination. It is fixed to a handle which can be firmly grasped, the blades are fenestrated so as to permit of observation of the rectal surface. After careful trial we consider it to be the best rectal speculum obtainable. It has been manufactured in a way which admits of the whole instrument being readily rendered aseptic, by Messrs. Ferris & Co., Bristol. The cost is 10s. 6d.

Richmond Couch (The).—This is designed by Mr. J. R. Johnson, M.R.C.S., and represents a combined consulting room couch and operating table.

The illustrations (*Figs.* 58, 59) will best explain its mechanism, which is distinctly ingenious and should meet a very general want,

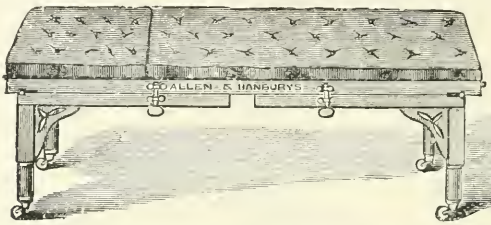


Fig. 58.

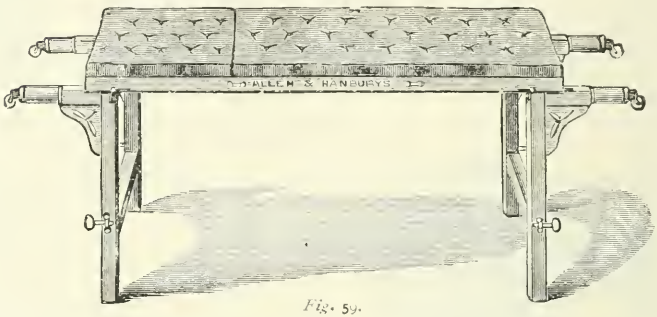


Fig. 59.

because few consulting rooms have space for two couches, and no single couch will answer both purposes until it has undergone the change which this one allows to be so easily accomplished. Messrs. Allen & Hanbury are its manufacturers, and they supply it complete from £5 5s.

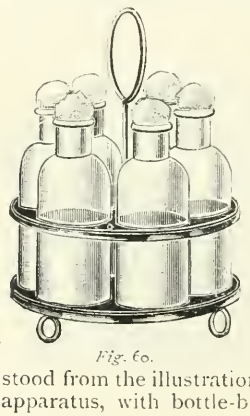


Fig. 60.

Scalpel Rack.—This is a little metal stand which holds six scalpels with a handle attached by which they can be lifted out at once and placed in the sterilizer or in boiling water before use. It is practical and convenient, and costs for holding six scalpels 2s. 6d. Messrs. R. Sumner & Co., of Liverpool.

Sterilizer (The Infant's).—This is the cheapest form of steriliser for infants' food that has been produced, and it is as efficient as the best. Its form can best be understood from the illustration (*Fig.* 60), and when we say that the complete apparatus, with bottle-brush and supply of cotton wool, only costs

2s. 6d., there is every reason to believe that it will be largely adopted by the profession. The same apparatus will lend itself readily to pancreatising food and many other purposes when it is necessary to heat fluids below boiling point. It is supplied by Messrs. Browne and Sayer, 104 Upper Thames Street, E.C.

Stretcher.—The Derham Carrying Sheet Stretcher claims to possess advantages over other stretchers, inasmuch as the poles are inserted into loops at the side of its sheet instead of being enclosed in the canvas.

The inventors point out that with sharp corners and narrow stairs the poles may be unshipped and the patient carried by the ropes attached to the sheet: this may answer in an emergency, but personally, we should prefer to use a small chair stretcher if available. The inventors further claim that this can be converted into a carrying chair by letting its canvas slack in the centre and removing it from the end of the poles, but unless shorter poles are supplied this does not much facilitate getting round corners. In the illustration (*Fig.* 61) representing this arrangement, the patient's buttocks are apparently too near the floor, and it looks as though there might be a great deal of bumping in going down stairs, unless the carriers flexed their arms, which would require unusual strength. We have not been able to test this appliance, but the illustration will enable the practitioner to judge of its adaptability to the requirements of a patient. Messrs. W. H. Bailey & Son, of 38, Oxford Street, W., are the manufacturers.

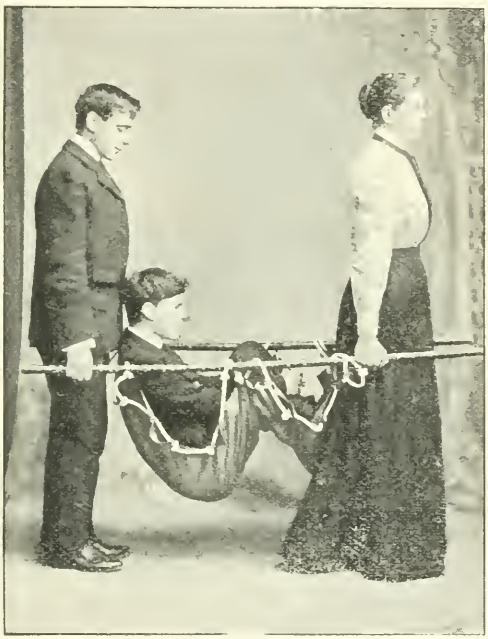


Fig 61.

Symes' or Pirogoff's Amputation (Appliance for).—Mr. K. R. Schramm has improved upon the appliance used for this operation by

suspending the stump between two steel stays, putting a padded calf to compensate for muscular atrophy and enclosing the whole

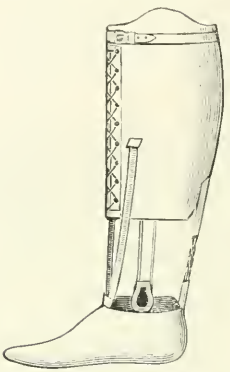


Fig. 62.—The further Improved Appliance.

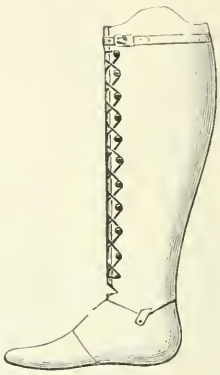


Fig. 63.—The usual Appliance.

down to the ankle so that the trousers are kept in proper place (*Figs.* 62, 63).

The Thorascope.—The phonendoscope has great advantages in examining the chest over the stethoscope, but it is not very convenient for carrying about. Under the name of the "thorascope," Messrs. R. Sumner & Co., of Liverpool, have brought to our notice an appliance which has all the advantages of the phonendoscope, but which can be carried complete in a little leather bag, 2 by 4 inches, so that it will go into the breast coat-pocket without bulging. The drum has a diameter of two inches and there is no sacrifice of efficiency to obtain smallness of compass. It is rather the neater method of construction which renders it not only a more portable but a more presentable looking instrument than any which has yet come under our notice. We highly commend this instrument, which costs only 8s. 6d., in a neat leather purse.

Urinary Test Stand (Sumner & Co's.).—There are two things about this stand to recommend it. In the first place it is unusually complete, containing, among other things, a complete apparatus for estimating the exact percentage of albumen in the urine (Esbach's method), reagents for Roberts' test for sugar, spirit lamp, urinometer, graduated pipette and funnel, in addition to the ordinary contents of the urinary test stand. The second point that recommends it is the cost. The whole stand, measuring $10\frac{1}{4}$ by $5\frac{1}{4}$ inches, is very compact, and with all the appliances and test solution is only 10s. 6d., a remarkably small price for the value given. The reagents are sent out in 2-ounce stoppered bottles, with special arrangements

for dropping. In fact, everything has been thought of for the convenience of the practitioner, even to the brush for cleaning the pipette.

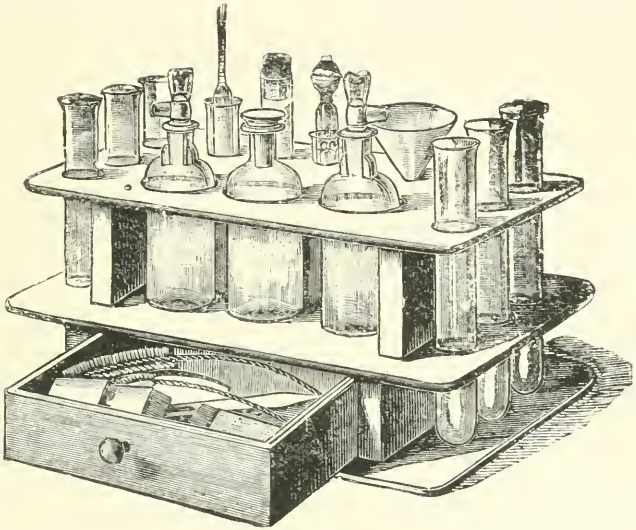


Fig. 64.

Messrs. R. Sumner & Co., of Liverpool, supply the apparatus (*Fig.* 64), which we strongly recommend.

Urinary Test Stand.—Messrs. Reynolds and Branson have introduced a new urinary test stand, the chief feature of which is the removable rack for test tubes, which facilitates their removal for cleansing purposes, and also the arrangement in this rack of glass tubes on which the inverted test tube rests while it is draining. The full-sized stand contains a very complete set of reagents and costs £1 10s., but by having fewer bottles the cost can be reduced to 19/6. It is excellently manufactured and will give satisfaction

Uterine Tenaculum (a Simple Self-retaining).

Alexander Duke, F.R.C.P.I.

A uterine tenaculum is indispensable to the gynæcologist, but the holding of it in position unfortunately monopolises the use of one hand completely. To obviate this inconvenience I have designed a simple instrument for getting over the difficulty, and Messrs. Reynolds and Branson, Leeds, have carried out the idea most satisfactorily. The greater part of handle being made of flexible metal, may be easily bent round either the pubis or sacrum after the necessary downward traction on the cervix has been made, thus assisting in the bi-manual

examination of the uterus and also in the palpation of the posterior wall through the rectum. The value of the tenaculum will be appreciated in private practice, where an assistant is not often to be had. If used through an ordinary cylindrical speculum it will not only hold

Fig. 65.

the cervix but render the speculum self-retaining in addition The simplicity, practical utility, and wide range of usefulness of this instrument (*Fig.* 65) should recommend its universal adoption by gynæcologists.

Vaccination Case (Aseptic).—The chief aim of Messrs. S. Maw, Son, & Thompson in the production of this aseptic vaccination case has been to provide a case which will contain all the necessary appliances for the public vaccinator, and at the same time be simple and easily manipulated. They have purposely avoided all kinds of complicated apparatus, such as portable sterilisers, lancet holders, and lift-out racks, inasmuch as they are deemed by most operators to be superfluous and clumsy in use. Undoubtedly the best means of sterilising the lancet is the flame of a spirit lamp. This is the method usually recommended by the Local Government Board Inspectors, and the one which has been adopted in the above case.

The case is made entirely of metal, and is of a size convenient to carry in the coat pocket, measuring, 6 inches in length, 3¼ inches in width, and ⅝ inch in depth.

Vaginal Speculum (Talley's Douching).—This is a very useful speculum for making vaginal examination; it is flat, or nearly so, when introduced, and the blades can then be opened to any desired extent. Its special feature is an arrangement by which any fluid injected into the vagina is received by a small funnel at its base, and can be carried to a receptacle by means of an india-rubber tube. This is a great convenience in cases where the vagina has to be washed out at the time of inspection, and its addition in no way interferes with the usefulness of the speculum when this is not required. It is so constructed as to be quite aseptic in practice. Messrs. Ferris & Co., of Bristol, are the manufacturers.

PROGRESS OF PHARMACY.

Antisepticine Tablets.—Very frequently we wish the patient to gargle or wash the mouth or insufflate some mild antiseptic fluid for weeks at a time. A convenient way of prescribing such treatment has been introduced by Messrs. R. Sumner and Co., of Liverpool. They have an excellent non-poisonous, pleasant, and thoroughly efficient antiseptic which they call Antisepticine, and which consists of thyme,

eucalyptol, peppermint, gaultheria, and benzo-boracic acid, and this is put up in tablets, one of which makes 8 to 10 ounces of just the right kind of gargle for such cases. They have the same antiseptic put up in the form of a powdered soap for washing the hands, and a most pleasant thing it is to use after an operation, both on account of its deodorant properties and its pleasant smell. It is also valuable for washing the hands after cigarette smoking. It completely frees the fingers from the smell of nicotine.

Bromaurum.—Since our last mention of this preparation of gold we have had an opportunity of testing it clinically. We consider that it has a beneficial influence upon the nutrition of the joints, and will prove more useful in chronic arthritic affections than in acute rheumatic attacks. That it produces a chemical change in the uric acid excreted is demonstrable by chemical experiment, but while such a test is very interesting and worthy of the attention which Messrs. Arthur and Co., of Berners Street, are giving it, we should hardly let this be the criterion which proves the success or failure of the remedy. If it can be shown that gold stimulates the nutrition of the joints, and we have reason for thinking that it does, from clinical experience, as well as from the teaching of the Arabian physicians, it would account for the beneficial effects of the remedy in many cases of chronic arthritic disease in which it has proved of undoubted benefit. It must be remembered that all the remedies at present used for chronic rheumatic and gouty disorders are distinctly of debilitating tendency; whether we use colchicum, iodide of potassium, or salicylates, the effect is to lower the general vitality. In chronic arthritic cases we need a tonic to the joints as well as to the general system. In bromaurum we may have the very remedy we need. It is well worthy of an extended trial.

Celloidin (Solution of Celloidin).—Dr. R. T. Williamson (Owens College) has called attention to the surgical value of solution of celloidin. Originally used as an embedding agent in microscopic work, the tenacity of the film which it forms has suggested other and remedial applications. In minor surgery, as the cases of cuts, punctured wounds, excoriations, etc., especially of the hands, it forms an excellent dressing. The deep cracks and fissures so troublesome in winter to persons having feeble circulation require no other treatment. Celloidin is much more reliable than collodion. Any moisture should be removed from the parts immediately before its application. 9d. oz., 10s. per lb. An antiseptic celloidin is also made (hydrarg. perchlor., 1—1000) and supplied in collapsible tubes at 3s. per dozen. Messrs. Reynolds and Branson are the manufacturers.

Chloretone.—Chloretone, acetonchloroform, or trichlor tertiary butyl alcohol, has, according to Willgerodt, the following formula :—

$$\begin{array}{c} CH_3 \\ CCl_3—C—OH \\ CH_3 \end{array}$$

It is formed when caustic potash is slowly added to equal weights of

chloroform and acetone, and may be isolated from this mixture, after the removal of any excess of acetone and chloroform, by distilling with steam. Obtained in this manner, it is a white crystalline compound, having a camphoraceous odour. When freed from water by melting, and allowed to cool, the camphoraceous odour is more pronounced and its general appearance resembles camphor more closely. It is very soluble in chloroform, acetone, strong alcohol, ether, benzin, and glacial acetic acid, sparingly soluble in cold water (1 per cent.), more soluble in boiling water. Dilute acids and alkalies are apparently without effect; concentrated sulphuric acid decomposes it. When purified by distillation with steam or when recrystallised from water, it melts between 80–81° C.; when freed from water, readily accomplished by distilling, it melts between 96–97° C.; and boils at 167° C. (Willgerodt). At body temperature it sublimes in the form of beautiful white needles.

As an hypnotic 10-15 grains is the average dose, in children 3–5 grains suffice. It has been used with success as a local anæsthetic. A saturated solution made with warm water equals about 1 per cent.; its solubility is increased by the addition of alcohol, 15–50 per cent. It has been used as a local anæsthetic in dental work. It is non-toxic, and antiseptic. Messrs. Parke, Davis & Co., 111, Queen Victoria Street, E.C., are the manufacturers, and supply literature on this interesting substance, of which we expect to hear more.

Chloroform and Ether.—It appears to be a necessary thing for the anæsthetist to invent an inhaler or modify someone else's, but while all this care is taken over the inhaler, anæsthetists and practitioners generally are far from careful as to the source of the anæsthetic itself. Chloroform or ether bought in small quantities from a chemist may be of the purest, and yet the bottle may have been opened so often for dispensing purposes, as to have deteriorated the remainder. We believe that both in hospital and private practice chloroform and ether should be kept in small bottles, say not exceeding 4 ounces, and that these should bear the seal of some reliable manufacturer.

We have lately tested the chloroform and ether manufactured by Messrs. Salamon & Co., Limited, of Ferry Road, Rainham, Essex, and we find both preparations absolutely pure and of the required specific gravity.

We do not know whether they supply the medical profession direct, but no doubt the chemists would supply it in original bottles, and the firm would send it in small sizes if requested. We think this subject deserves more attention than it has yet received.

Condal Water.—This Spanish mineral water has some advantages over the German sulphate of magnesia waters. It contains more sodic salt and is less unpleasant to take. One ounce yields sodii sulph., grs. xx; magnes. sulph., 1½ grain, and chloride of sodium, 1 grain.

When the magnesia salt exists in larger proportion we have a more bitter but not more effectual preparation.

Condal water can always be ordered when a sulphate of soda water is wanted. It answers admirably in gouty conditions. It is imported by

the Condal Water (1900) Limited, warehouses, 7, Lambeth Hill, London, E.C.

Dylissia Soap and Cream.—Under this name Messrs. Durant & Co., 21, Rosebery Avenue, E.C., have produced a number of toilet preparations of a very soothing and emollient nature and containing no matter of an injurious character. They are very useful when employed alone as soothing applications to a delicate skin, and the "cream" forms an excellent vehicle for the administration of any skin remedy which may be indicated.

Ecthol.—This is a combination of the active principles of echinacea augustifolia, and thuja. Both these plants have long enjoyed a reputation for the cure of certain dyscrasiæ of the body. When there is a poisoned condition of the secretions such as in typhoid, erysipelas, carbuncles, boils, and disposition for the formation of pus, echinacea is a valuable remedy. Thuja has a somewhat similar reputation, but is particularly indicated when there is proliferation of tissue such as occurs in warts, tumours, and fungous growths. The combination of these two remedies under the name of ecthol gives us a new preparation for a class of disorders which the ordinary remedies do not always meet, and as such we can accept it as a valuable addition to our resources. It is produced by Battle & Co., St. Louis, U.S.A., and the British agents are Roberts & Co., 76, New Bond Street, London.

Ichthargan.—This preparation is a chemical compound of ichthyol and silver in powder form; it contains 30 per cent. of Ag., is perfectly soluble in cold and warm water as well as in glycerin, is non-irritating, has a surprisingly good penetrating power, and is absolutely fatal to gonococci even in so weak a percentage as 0·015, and therefore ought to prove almost specific in the treatment of gonorrhœal cases. Moreover, recent trials which Dr. Leo Liestikow, of Hamburg, has made with ichthargan distinctly indicate the advantage of this silver salt of ichthyol over others, and judging by this observer's results and other confirmatory reports, injections or irrigations of 0·02 per cent. to 0·075 per cent. up to 0·1 per cent. have proved its remarkably efficacious effect in almost all conditions of gonorrhœa; also in ophthalmic practice. It is further claimed that ichthargan is superior to nitrate of silver in its antibactericidal effect, the more or less corrosive and irritating "nitric acid" of the Argent nit. being replaced by the ichthyol sulphonic acid. It is obtainable from Mr. Gustav Hermanni, jun., 20, High Holborn, London, W.C.

Ichthyol Moor Powder.—This is composed of ichthyol and mineral-boggy turf evaporated to dryness, which contains, besides the usual properties of peat, sulphuret and peroxide of iron: its main ingredients are formic acid and "ichthyol." These bodies are of chief value in rheumatic affections of all kinds. Its method of employment in such cases is as follows: The powder is mixed with warm water. It is then boiled and wrapped in a linen bag, in which the painful part is packed, or is mixed with the bath water. It allays the pain of chronic processes in a wonderful way, and at 86° to 104° F.

causes the absorption of inflammatory deposits. In chronic gout the best results are obtained when the powder is applied at lower temperatures, not exceeding 77° to 80·6° F.

Hirschkron ("Wien. Med. Presse," Aug. 6, 1899) says that by this method he obtained very good results also in chronic neuralgia, the lightning pains of tabes, and pelvic inflammation, the pain being suppressed and the inflammatory deposits absorbed. The analgesic action can be raised by spreading a 30 per cent. ichthyol ointment over the part before applying the powder. On an average thirty to forty "packings" were required in each case. The powder appears to cure partly through the action of the ichthyol on the cutaneous vessels and partly as a fermentation. The treatment is simple, clean, free from odour, and fairly cheap, as the *same* material is used throughout the course of treatment or duration of the disease. This powder can be obtained of Mr. Gustav Hermanni, jun., 20, High Holborn, W.C.

Ichthyol Soap.—Messrs. Ferris & Co., of Bristol, supply an ichthyol soap containing 5 per cent. of the remedy. It is well prepared and should prove very useful in cases of irritable skin, as well as in many skin diseases.

Krolein.—This is a new basis for ointment, introduced by Messrs. Reynolds and Branson, of Leeds, as a substitute for and as an improvement on adeps lanæ. The adeps lanæ from which krolein is made is guaranteed to answer all the requirements of the British Pharmacopœia. We understand that Messrs. Reynolds and Branson issue the various B.P. ointments, using krolein as a base, at the same price as when made with the ordinary bases, and that they issue them in collapsible tubes if required.

This ointment base deserves a careful trial at the hands of the profession, and the moderation as regards price should encourage its extended trial in hospitals.

Lithia.—Messrs. Ferris & Co. have introduced tablets of compressed effervescing citrate of lithia. Each tablet constitutes a dose. It is an extremely convenient method of prescribing the remedy.

Lypthymine.—An elegant and effective antiseptic and deodorant. When diluted (1 to 4) it forms a useful and agreeable mouth wash; undiluted on a pledget of cotton wool, a satisfactory deodorant for cavities after extraction. It is exceptionally useful for cleaning dentures. The chief constituents are thymol, oils of eucalyptus and wintergreen, boric and benzoic acids. It is manufactured by Messrs. Reynolds and Branson, of Leeds, at 2s. 6d. per lb.

Mercurol.—This is a compound of yeast nuclein with mercury which was described fully in a former issue; it is soluble in water, particularly in warm water, yielding solutions having a neutral or faintly alkaline reaction.

It is a powerful germicide, and its destructive action is very clearly manifested upon pyogenic organisms in general and the gonococcus in particular.

It is applied locally in a 1 per cent. solution, which acts most happily when freshly prepared. It does not coagulate albumen; it is not caustic or corrosive; it destroys bacteria, especially pyogenic bacteria, thus controlling suppurative processes: it is not precipitated by alkalies. From the nature of its composition and the rationale of its action, we predict for this new germicide a brilliant record in the contest with pyogenic organisms. Messrs. Parke, Davis & Co. are the manufacturers.

Mist. Anti-Ferment Conc.—This is a combination of antisepticine (which see) with compound tincture of cardamoms. It is a very useful preparation as a carminative, and has done good work in flatulent dyspepsia. It is, of course, an intestinal antiseptic, while the essential oils contained in the antisepticine resolve the intestinal gases. It is a really practical and novel prescription. It is produced by Messrs. R. Sumner & Co., of Liverpool.

Nitro-Propiol Test for Sugar in Urine).—This reagent gives an indigo blue colouration when sugar is present. The reaction is not given by uric acid, kreatinine, nor by many drugs which give misleading results when Fehling's solution is used. Nitro-propiol gives a distinct indication of the presence of 1 part glucose in 3,000 parts of urine. Messrs. Reynolds and Branson, of Leeds, put up 25 pellets in tube for 1s. This is quite the handiest way of using the preparation.

Petroleum Emulsion, Angier's.—Dr. C. Burbidge White, A.B., M.D., late Examiner in Physiology, Senior Demonstrator of Anatomy and Materia Medica, Roy. Coll. Surg., Ireland, has instituted a series of researches concerning the action of Angier's petroleum emulsion. He concludes that this emulsion is: (1.) Inhibitory to the growth of putrefactive bacteria such as are met with in the alimentary canal, while it does not inhibit or interfere with peptic or pancreatic digestion; (2.) And therefore is an agent for relieving flatulence by preventing fermentation in such conditions of the bowel: in fact it acts the part of an intestinal antiseptic; (3.) By its action in stimulating peristalsis, and increasing diffusibility of the intestinal contents, it not only increases nutrition and weight, but helps the natural movements of the bowel by its lubricating power and relieves constipation; (4.) That it enters the blood and is carried to different portions of the body such as the kidneys and urine, where it becomes applied to the mucous surface of the bladder, thus relieving cystitis and other bladder troubles which it has been frequently shown clinically to have done; (5,) That the emulsion proves to be a strengthener and vitaliser to the body, thus fortifying its disease-resisting powers by increasing the absorption of nutrient material daily during its use, and it acts as an absorbable anti-bacillary agent, inhibiting and preventing the growth of some bacteria which cause diseased conditions of the body. The author admits that petroleum has no food value in itself, but that the increase of weight which occurs is due to the reasons given.

Phosphorus.—Dr. O. E. Horn (D.Sc.) of Bournemouth, has invented a method of preparing free phosphorus in permanent solution, without the use of chloroform, ether or oil. This "elixir" contains $\frac{1}{10}$ grain of free phosphorus to 1 drachm, and is miscible with water, and is compatible with many quinine and iron preparations.

We regard this as a distinct advance in pharmacy which will make phosphorus more appreciated as a remedy, the difficulty of dispensing it being removed. It is supplied to medical practitioners for dispensing only in $\frac{1}{2}$ and 1 lb. bottles at 3s. and 5s. 6d. respectively.

Pil. Phosphori Co.—Messrs. Arthur H. Cox & Co., of Brighton, have sent us a sample of pills containing free phosphorus. The coating of these pills is such as to preserve the phosphorus in a free state, and if the practitioner will be careful to keep them and see that they are dispensed in a *bottle* they will retain their condition for a long while. We notice that Messrs. Cox & Co.'s list contains no less than 35 formulæ of pills presenting phosphorus in various combinations. A very good one for a general tonic is No. 219: Phosphori, gr. $\frac{1}{50}$: ferr. redact. gr. iij; quin. sulph., gr. $\frac{1}{2}$: strychninæ, gr. $\frac{1}{10}$. Messrs. Cox also send us a gelatine coated pill (404) which equals a drachm of Easton's syrup.

Piperidine Tartrate.—Readily soluble in water, possessing much greater solvent power for uric acid deposits than piperazine; it is, therefore, more efficient in gouty affections. Best mode of administration, 30 to 40 grains daily, well diluted with water or aërated water. Dose, 5 to 15 grains. It is expensive, costing 5s. 6d. an ounce. Messrs. Reynolds and Branson, of Leeds, put up siphons containing 30 grains at 8s. per dozen. This is a convenient way of administering it. They also put up 5-grain tablets at 25 for 2s.

Serums.—Messrs. Ferris & Co. prepare antitoxic serum and other preparations of this class at their Bristol Laboratory, and have arranged a number of code words which the practitioner can use in wiring for them. They also send us a special package which the practitioner can use in taking samples requiring bacteriological examination to be sent to their laboratory for investigation.

Tabloids.—Messrs. Burroughs, Wellcome, & Co. send us some specimens of their tabloid preparations, which are too well known to need comment. We have not received samples of their tabloids for the preparation of the solutions used in photography, but considering the large number of our readers who use the camera we think it well worth while to call attention to them. Their portability and exactness of measurement render them an invaluable aid to the medical photographer, and especially so when travelling. We have used them for some time and with great satisfaction.

Traumatol.—This is an iodide of cresylic acid and has been demonstrated to be a most powerful bactericide. It received the Grand Prix at the recent Paris Exhibition, and has for some time been extensively

used in France and more recently in this country, having been introduced by Messrs. Oppenheimer, Sons & Co. They now send out the mother liquor of traumatol which can be diluted with water to form a lotion or an injection.

Vasogen.—This substance has a remarkable facility for penetrating the skin and is the best excipient for ointments when required to be used for inunction. Mr. E. J. Reed, of Dunedin House, Basinghall Street, E.C., has sent us a number of ointments prepared with vasogen as a base, and there can be no question that it has more penetrating power than any other ointment bases on the market. We are glad to have become acquainted with it.

DIETETIC ARTICLES.

Asses' Milk.—We have previously called attention to the truly valuable work done by Messrs. Welford & Sons in providing suitable milk for hand-fed infants. Their humanised milk has met with the unqualified approval of the profession. It is as near the composition of human milk as possible. It is sterilised and travels well, as we can attest from personal experience. The same firm make a speciality of supplying asses' milk, which is the nearest approach to mothers' milk which occurs naturally. They send the milk in sealed bottles immediately on receipt of a telegram, which should be sent to their Hyde Park branch, 54, Edgeware Road, London, W. They will also let out milch asses on hire when desired. We think these facts will be useful to our readers. We have carefully examined both these forms of milk, and can only speak in the highest praise of them.

Beef Tea.—There is always an advantage in cases of sickness to be able to procure beef tea at a moment's notice, but doubt often arises as to whether the manufactured product contains the same amount of nourishment as the home-made article, when produced by someone who knows how to make it. We have carefully examined a specimen of beef-tea produced by Mr. C. Shippam, of Chichester, and we are quite satisfied that it contains all the albuminous principles of the meat, as well as the fibre, and that it can be absolutely relied upon in cases of sickness. It is palatable and is sent out in glass bottles, a point to which we attach great importance.

Chicken Broth Jelly is another product of the same firm, and is intended to be taken cold as a jelly, or may be melted with water to make a broth. It is very palatable and reliable.

We highly commend both these productions.

Carnos.—This preparation of beef is now widely and favourably known. The Company have recently introduced an invalid extract which is very palatable and easily digested. It is most useful when a beef soup is required in an emergency.

The Carnos Co., Limited, 8, Warwick Court, Gray's Inn, W.C.

Carnos Stout.—We have received a sample of invalid stout from the Carnos Company. It appears to be a well-brewed liquor of soft and delicate flavour well suited for invalids.

Cheltine Foods.—These foods are carefully prepared to meet the dietetic indications for particular conditions and circumstances under which such foods are required. Thus the *Cheltine Infants' Food* is prepared in such a way as to simulate as nearly as possible the mother's milk.

The *Cheltine Anæmic Food* is particularly combined to meet cases where it is necessary to restore the red blood corpuscles.

The *Cheltine Invalids' Food* is prepared with a view to rapidity of digestion, and is claimed to contain only 0·58 per cent. of indigestible matter.

The *Cheltine Dyspeptic Food* is prepared particularly for dyspeptics, and the manufacturers state that "to make the food still more useful a special and non-injurious medication has been effected." Here we think they are wrong. Any medicament put into a food should have its nature and exact amount stated on every package, otherwise no one can prescribe it or take it with confidence. The same firm also produce diabetic food and biscuits. They claim for these that its carbo-hydrates are so altered that they will not yield diabetic sugar in the process of digestion. We have not been able to make any experiments upon this point, but we can confirm their statement that the biscuits are more palatable than ordinary "Diabetic" biscuits. We consider that these biscuits are more equivalent to well-toasted bread than to the gluten biscuits used in diabetes. If we are wrong on this point we shall be glad to have evidence to the contrary, as a palatable anti-diabetic biscuit is much to be desired.

Worth's Food Syndicate, of Cheltenham, are the manufacturers.

Coffee.—Under the name of Pure Liquid Coffee, Messrs. Capolen & Co. of 20, Eastcheap, produce a very concentrated extract of coffee which can instantly be prepared for use by the addition of hot water. The flavour of the coffee is well preserved, and it forms a very useful preparation both for invalids and for household use.

Earl's Food.—This food represents an effort to combine cereals in such a way that the maximum of the right kind of nutriment is obtained, while its digestion is facilitated by partial cooking. It is rich in albuminoids and natural fats, and both invalids and infants can digest and assimilate it without difficulty. We can recommend it. It is prepared by the Infant and Invalid Food Co., 54, City Road, London, E.C.

Liqueur Lerina.—Visitors to Cannes will know the monastery on the Isle St. Honorat, and the efforts made by the monks to produce a liqueur which will rival that made by the Fathers at Chartreuse and Benedictine. This is the liqueur lerina. It has a most delicate flavour, one which must result from the happy combination of many

aromatic essences, none of which are allowed to be predominant, so that it is not likely to cloy upon the palate. It has a decidedly stimulating effect upon the stomach, increasing the secretion of the gastric juice and promoting appetite, so that it might be administered before a meal to those with delicate digestions. It has a drier taste than many liqueurs. It is not only a palatable, but a highly stimulating stomachic in its neat state. When diluted with aërated water it is a very suitable form of stimulant for patients who dislike the taste of whiskey or brandy. It is sold in this country by the eminent firm of Coverdale, Pohlmann & Co., 5, Mark Lane, E.C.

Manhu Diabetic Foods.—These foods are valuable as constituting a bridge between the use of gluten on the one hand, and ordinary bread upon the other. Patients starve on gluten bread, or find life a burden while they are compelled to live upon it. In the Manhu Diabetic Foods (*i.e.*, flour and biscuits), the carbo-hydrates are changed, but none are eliminated. The change is slight but effective. The starch is not changed to glucose. While there is a considerable percentage of sugar in ordinary flour, there is none in Manhu Diabetic Flour, but there is some two per cent. of maltose, which has quite a different molecular constitution from glucose. For instance, the biscuits are sweet without sweetening substances being added.

We consider these foods well worthy of careful trial by the profession.

Marvis.—This is a distinct novelty in the form of concentrated food. Made entirely from white fish, it is produced in the form of a white powder which, when mixed with water or milk, has the delicate flavour of white fish. It contains 53·31 per cent. of proteids, and 30·29 of albuminoids, and these in a form most easy of digestion, so that it can be recommended with great confidence to invalids and dyspeptics, as one of the strongest and most digestible of concentrated foods. The makers give a number of receipts for making fish soups and cakes with it. It would make an agreeable change from the ordinary soups and beef teas in an invalid's diet, and we believe that many new ways of using this valuable product will yet be discovered.

It is made by the Patent Fish Food Syndicate, Limited, Berry-yards, Greenock.

Mellin's Food has become a household word, and deservedly so, because chemically it is closely allied to mother's milk (except in possessing a smaller percentage of fat), and because practical experience justifies the chemical analysis, two facts which do not always follow one another. The firm have lately produced some Mellin's food biscuits which come very well into use between the period when the infantile diet is being changed to a more solid food. They may also be used for invalids with some advantage. The lacto-glycose issued by the same firm is intended for use in cases where there is a difficulty in procuring fresh milk. It is practically a combination of cow's milk and Mellin's food, and forms a highly nutritious compound which is useful both for infants and invalids.

Milk Chocolate.—Popular as a sweet-meat, but none the less valuable as a food is "Peter's Milk Chocolate," manufactured at 28, Wellclose Square, London, E. It contains the nourishing qualities of chocolate combined with pure milk, and so well is it made that it does not cause loss of appetite or create thirst. There have been many imitations of this chocolate produced, but none we have examined have the qualities which have made Peter's famous. A few tablets of this chocolate might very well find a place in the carriage of the practitioner, and form an insurance against exhaustion when long detained without a meal.

Nutrient Suppositories.—Messrs. Ferris & Co. have assisted rectal alimentation by providing a choice of suppositories, sending out two, one containing meat, and the other milk. Both are readily soluble in the rectum, and can be relied upon in cases requiring such treatment.

Peptone, Gerrard's Liquid.—This is a peptone of meat and malt, and represents a complete food. It is highly nutritious, and more easily digested than most forms of food. It is particularly indicated in the very worst cases of failure of nutrition, when the patient cannot digest or assimilate ordinary foods. Each ounce represents the equivalent of about three ounces of solid food. We think it is one of those things that the practitioner should make a note of, and ask his chemist to stock. We have tested it carefully, and consider that in respect to nutritive power, digestibility, and absence of unpleasant taste, it is a food which patients may be ordered with great confidence.

It is manufactured by Messrs. Cuxson, Gerrard & Co., Oldbury.

Plasmon.—This is a proteid food prepared from milk. It contains all the proteids of milk in the form of the serum albumin casein and the nuclein in a soluble form. It is readily digested, and easily assimilated; 90 per cent. of the albumin being available for assimilation. Besides the percentage of available albumin it contains the salts of milk in the form of phosphates of lime, soda, iron, and potash.

Therapeutically, plasmon is one of the most valuable foods, and may be used in fevers, especially typhoid; in various gastric and intestinal affections, and in summer diarrhœa; in phthisis it forms an excellent method of administering a large amount of nutritive food without upsetting the gastric organs. It is manufactured by the Plasmon Syndicate Co., 56, Duke Street, Grosvenor Square, London, W.

Soutouma.—The practitioner might do worse than prescribe "Soutouma" for children with defective nutrition who will not take fat. It is a caramel sweet-meat made with rich milk from which no cream has been extracted. There is a great deal more nourishment in this caramel than in many of the foods especially recommended for invalids. In fact, the sustaining qualities of sugar itself are too much neglected in medical practice. In Germany sugar is served out as a ration to soldiers on this account. In this country mothers

frequently deprive their children of "sweets" under the ridiculous notion that it injures the teeth. Personally we always recommend sugar in some form to those who crave for alcohol. It is a stimulant as well as a food. Manufactured by S. J. Mackenzie & Co., Limited, 28, Wellclose Square, London, E.

Tropon. This new product has recently been recommended by Dr. S. A. Knopf (New York Throat and Nose Hospital) as an important food in the treatment of pulmonary tuberculosis. It occurs as a tasteless and odourless albuminous preparation in the form of a yellowish-brown powder, obtained through a complicated chemical process from animal and vegetable substances. Among animals, fish, and among vegetables, the lupines, which ordinarily are not suitable for the preparation of food for men, have been largely used. Tropon is supposed to represent over 90 per cent. of pure albumen.

Knopf obtained an increase of weight of 1½ lbs. in twenty days giving 1 to 2 ounces of tropon a day. At Weicker's sanatorium in Goerbersdorf patients gained 2¼ lbs. in four weeks. Its great value consists in the fact that it is easily digested and assimilated. Tropon chocolate contains 15 per cent. of tropon, and is most palatable, of course exceeding in nutritive power all ordinary preparations of chocolate. The same firm produce tropon biscuits and tropon rusks, both of which can be highly recommended for their nutritive power.

Tropon is made in Germany: the British agents are Arthur Reiner & Co., Old Broad Street, E.C.

Books of the Year.

A List of the Principal Medical Works and New Editions Published during 1900.

AMBULANCE AND NURSING.

Ambulance Work: Questions and Answers upon First Aid By J. W. Martin, M.D. and J. Martin, M.D. *Baillière* - - - *Net* 1/-

Art of Feeding the Invalid. A Series of Chapters on the Nature of certain Prevalent Diseases and Maladies: with Recipes for the preparation of Food. By a Medical Practitioner and a Lady Professor of Cookery. Crown 8vo, pp. 272. *Scientific Press* - - - 1/6

Burdett's Official Nursing Directory, 1900. Cr. 8vo. *Scientific Press.* 5/-

First Aid (Practical). By W. Robertson. Illustrated. 16mo, pp. 150. *A. Gardner* - - - - - - - - - - - *Net* 1/6

First Aid to the Injured: With special reference to Accidents occurring in the Mountains. A Handbook for Guides, Climbers and Travellers. By Oscar Bernhard. Translated by Michael G. Foster, M.D. Cr. 8vo. pp. 144. *Unwin* - - - - - - - - - - 2/6

First Aid to the Injured and Sick. By F. J. Warwick and A. C. Tunstall. Fcap. 8vo, pp. 232. Illustrated. *J. Wright & Co.* (Bristol). 2/6

Home Nursing: Modern Scientific Methods for the Care of the Sick. By Eveleen Harrison. Cr. 8vo, pp. 248. *Macmillan* - - 4/6

Home Nursing of Sick Children. By J. D. E. Mortimer, M.B. Cr. 8vo, pp. 82. *Scientific Press* - - - - - - - - 1/-

Medical and Surgical Help for Shipmasters: A Medical and Surgical Help for Shipmasters and Officers in the Merchant Navy, including First Aid to the Injured. By W. Johnson Smith. With Coloured Plates and numerous Illusts. 2nd ed., revised. Cr. 8vo, pp. 368. *Griffin* 6/-

Medical and Surgical Nursing. By H. J. O'Brien. Cr. 8vo. *Putnam* *Net* 6/-

Mental Nursing. By Wm. Harding. Cr. 8vo, pp. 100. *Scientific Press* 1/-

Mock-Nurses of the Latest Fashion, A.D. 1900: Professional Experiences in Short Stories, and the Nursing Question. By Frederick James Gant. Cr. 8vo, pp. 274. *Baillière* - - - - - *Net* 3/-

Nurse's Report Book, The. Compiled by K. H. 4to, limp. *H. J. Glaisher* - - - - - - - - - - - - 6d.

Nursing: Handbook of. By M. N. Oxford. Cr. 8vo, pp. 292. *Methuen.* 3/6

Nursing: Manual of (Medical and Surgical). By Laurence Humphry. With numerous Illustrations. 20th ed., entirely revised Cr. 8vo, pp 268. *Griffin* - - - - - - - - - - 3/6

Nursing in Diseases of the Throat, Nose and Ear. By McLeod Yearsley. Demy 8vo, pp. 124. *Scientific Press* - - - - 2/6

Nursing Profession: How and Where to Train. By Sir Henry Burdett. 2nd year. Cr. 8vo, pp. 388. *Scientific Press* - - - - *Net* 2/-

Nursing and Hygiene: Illustrated Lectures on. With Illustrations. By R. Lawton Roberts, M.D. 3rd ed. Cr. 8vo, pp. 250. *H. K. Lewis.* 2/6

Sick Nursing. By Christabel Osborn. With an Introduction by Eva C. E. Luckes. 12mo, pp. 150; sewed. *W. Scott* - - - 1/-

Sick Nursing at Home. By L. G. Moberley. Cr. 8vo, pp. 94. *Scientific Press* - - - - - - - - - - - - - 1/-

Surgical Ward Work and Nursing: A Handbook for Nurses and others. By Alexander Miles. With 333 Illusts. 2nd ed. 8vo, pp. 294. *Scientific Press* - - - - - - - - - - - - - *Net* 3/6

ANATOMY AND PHYSIOLOGY.

Anatomy: Compend of Human, including Anatomy of the Viscera. By Samuel O. L. Potter. 6th ed., revised and enlarged. Cr. 8vo, pp. 290. *Pentland* - - - - - - - - - - - - - 5/-

Anatomy: Essentials of Regional. By Richard J. A. Berry, M.D. Cr. 8v, pp. 494. *Churchill* - - - - - - - *Net* 10/-

Anatomy of the Central Nervous Organs in Health and Disease. By Heinrich Obersteiner. 2nd ed. by Alex. Hill. With 224 Illustrations. Roy. 8vo, pp. 566. *Griffin* - - - - - - - - - 30/-

Atlas of Human Anatomy. By W. Spaltcholz. Translated from the 3rd German edition by L. F. Barker. Vol. I.—Bones, etc. Imp. 8vo. *Williams & Norgate* - - - - - - - - - *Net* 14/6

Histology: Essentials of. Arranged with Questions following each Chapter. By Louis Leroy. With 72 Illustrations. Cr. 8vo, pp. 232. *Saunders* - - - - - - - - - - - - - *Net* 4/-

Histology of the Blood: Normal and Pathological. By P. Ehrlich and A. Lazarus. Edited and Translated by W. Myers, B.Sc. With a Preface by G. Sims Woodhead, M.D. Cr. 8vo, pp. 230. *Camb. Univ. Press* - - - - - - - - - - - - - *Net* 5/-

Human Figure: Its Beauties and Defects. By Ernst Brucke. New and cheaper ed. With 29 Illustrations by Hermand Paar. Cr. 8vo, pp. 202. *Grevel* - - - - - - - - - - - - - 5/-

Microtomist's Vade Mecum; A Handbook of the Methods of Microscopic Anatomy. By Arthur Bolles Lee. 5th ed. 8vo, pp. 546. *Churchill* - - - - - - - - - - - - - 15/-

Normal Histology. By E. K. Denham, M.D. 244 Illustrations. Roy. 8vo, pp. 319. *Rebman* - - - - - - - - - *Net* 11/-

Physiological Action of Alcohol: Primer of. By Edwin J. Norris. With an Introduction by Dr. Clifford. Cr. 8vo, pp. 72. *Sonnenschein.* 1/-

Physiology: American Text-Book of. Edited by Wm. H. Howell, M.D. Vol. I. 2nd ed., revised. Imp. 8vo, pp. 598. *Saunders* - - *Net* 13/-

Physiology: Handbook of. By W. D. Halliburton. 16th ed. With upwards of 650 Illustrations, including some Coloured Plates. 8vo, pp. 892. *J. Murray* - - - - - - - - - - - 14/-

Physiology: Golden Rules of. "*Golden Rules*" *Series, No.* 6. By I. Walker Hall, M.B., and J. Ackworth Menzies, M.D. 32mo, pp. 80. *J. Wright & Co.* (Bristol) - - - - - - - - - 1/-

Physiology, Human: Elements of. By Ernest H. Starling, M.D. 4th ed. 317 Illustrations. 8vo, pp. 692. *Churchill* - - - 12/6

Physiology: Lessons in Elementary. By Thomas H. Huxley. Enlarged and revised ed. 12mo, pp. 636. *Macmillan* - - - - - 4/6

Physiology: A Manual for Students and Practitioners. By Howard D. Collins and W. H. Rockwell. Illustrated with 153 Engravings. 8vo, pp. 324. *H. Kimpton* - - - - - - - - - *Net* 7/6

Physiology: Manual of. With Practical Exercises. By G. N. Stewart. With 336 Illustrations and 5 Coloured Plates. 4th ed. 8vo, pp. 894. *Baillière* - - - - - - - - - - - - - *Net* 15/-

Physiology: Notes on. By Henry Ashby. 7th ed. Cr. 8vo, pp. 428. *Longmans* - - - - - - - - - - - - - 5/-

Physiology: Text-Book of. By E. A. Schäfer, F.R.S. Vol. II. Imp. 8vo, pp. 1392. Numerous Illustrations. *Pentland* - - - - - 42/-

Physiology: Text-Book of. By Winfield S. Hall. Roy. 8vo, pp. 672, 6 Coloured Plates and 348 Engravings. *Rebman* - - - - *Net* 20/-

Physiology: Text-Book of. By M. Foster, assisted by W. H. R. Rivers, M.A., M.D. 6th ed., revised. Part IV. The Senses. 8vo, pp. 322. *Macmillan* - - - - - - - - - - - - - 10/6

Surgical Anatomy. By John B. Deaven, M.D. 3 Vols., about pp. 700 each. Vols. I and II ready; Vol. III nearly ready. Square 8vo. Illustrated with about 450 plates. *Rebman* - - - *Net* 105/-

The Gross and Minute Anatomy of the Central Nervous System. By H. C. Gordinier. Roy. 8vo. 48 Plates and 223 Illustrations. *Rebman* - - - - - - - - - - - - - *Net* 25/-

The Myology of the Pelvic Floor. A Contribution to Human and Comparative Anatomy. By Peter Thompson. With Illustrations and Bibliography. Roy. 8vo, pp. 108. *Simpkin* - - - - - *Net* 5/-

BACTERIOLOGY.

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Maidstone — *Kent County Asylum.* Res. Med. Supt., F. P. Davies, M.D. Access — Maidstone sta., 1½ miles.

West Malling Place (for ladies). Castle House and Winthies Cottage (for gentlemen). Res. Med. Supt., Dr. James Adam. Access—Malling station, 1 mile.

Market Lavington (Wilts). *Fiddington House.* Prop., Major Reilly. Med. Supt., Dr. J. Selfe Lush. Access — Lavington, 1½ Devizes, 6 miles.

Maryborough (Queen's County). — *District Asylum* Res. Med. Supt., Dr. J. H. Hatchell. Access—Maryborough, ½ mile.

Melrose, N.B.—*Roxburgh District Asylum.* Res. Med. Supt., J. C. Johnstone, M.D. Access—Melrose, 1 mile,

Melton. — *Suffolk County Asylum,* near Woodbridge. Res. Med. Supt., J. R. Whitwell, M.B. Access—Melton station, 1¼ mile; Woodbridge station, 2¼ miles.

Middlesboro'.—*York County Boro Asylum.* Med. Supt., Dr. G. S. Pope.

Monaghan (Ireland).—*District Asylum.* Res. Med. Supt., Dr. Edwd. Taylor. Acc.—Monaghan, ¼ mls.

Montrose, N.B.—*Montrose Royal Lunatic Asylum.* Phys. Supt., John G. Havelock, M.D. Access—Hillside, ¼ mile; Dubton, 1 mile.

Morpeth. — *Northumberland County Asylum.* Res. Med. Supt., Thos. W. McDowall, M.D. Access—Morpeth station, 1 mile, by 'Bus.

Mullingar.—*District Asylum.* Res. Med. Supt., Dr. A. D. Finegan. Access—Mullingar sta., 1 mile.

Nelson (Lanc.). — *Marsden Hall* (both sexes). Res. Prop., Mrs. Bennett. Med. Supt., Dr. A. P. Millar. Access—Nelson or Colne sta., 1½ miles. *See also p.* 788.

Newcastle-on-Tyne. — *City County Asylum,* Gosforth. Res. Med. Supt., James T. Callcott, M.D. Access—Newcastle, 4 mls.

Newton-le-Willows (Lanc.) — *Haydock Lodge Asylum.* Med. Prop., E. H. Beaman, M.R.C.S., Edin. Res. Med. Supt., Dr. C. T. Street. Access—Newton-le-Willows station, 2 miles.

Northampton.—*Berrywood Asylum.* Res. Med. Supt., W. Harding, M.D. Access — Castle station, 2 miles; Midland stat., 2½ miles.

St. Andrew's Hospital. Med. Sup., J. Bayley, M.R.C.S. Access—Northampton station, 1 ml.

Norwich.—*Heigham Hall.* Lics., Mrs. Watson and Mr. A. Mottram. Res. Med. Supt., Dr. A. McWilliam. Access—Victoria station, 1 mile; Thorpe sta., 1½ miles.

See also p. 793.

Norfolk County Asylum, Thorpe. 850 beds. Res. Med. Supt., D. G. Thomson, M.D. Access—Whitlingham station, 1 mile.

Norwich City Asylum, Hellesdon, near Norwich. Res. Phys. and Supt., Wm. Harris, M.D. Asst. Med. Off., Dr. A. Sykes. Access—Thorpe, cab 4/-; Victoria station, cab, 3/6; City station, 3/-; Hellesdon sta., 1 mile.

The Bethel Hospital for the Insane. Res. Med. Supt., J. Fielding, M.D. Con. Phys., Sir F. Bateman, M.D. Access—Thorpe sta., 1 mile. *See also p.* 786

Nottingham.—*City Asylum,* Mapperley Hill. Med. Supt., E. Powell, M.R.C.S.

Notts County Asylum, Sneinton. Res. Med. Supt., Dr. A. Aplin. Access—M., G.N. or G.C. stations, 15 minutes.

The Coppice. Res. Med. Supt., W. B. Tate, M.D. Access—Mid. and Great Northern station, 2½ miles

Omagh.—*District Asylum.* Res. Med. Supt., Geo., E. Carre, M.B. Access—Omagh, 1½ miles.

Oxford.—*Oxford County Asylum.* Res. Med. Supt., R. H. H. Sankey, M.R.C.S. Access—Littlemore station, G.W.R.

Warneford Asylum, Oxford, 1½ miles (for private patients only), Res. Med. Supt., James Neil, M.D. Access—Oxford station, 2¼ miles. *See also p.* 791.

Paisley.—*Parochial East Asylum* Med. Supt., T. Graham, M.D. Access—Paisley, 1 mile.

Parochial Asylum, Riccartsbar. Med. Off., D. Fraser, M.D. Access—Paisley West, ¼ mile.

Perth.—*District Asylum,* Murthly. Res. Med. Supt., Lewis C. Bruce, M.D. Access—Murthly.

James Murray's Royal Asylum (for private patients only), Perth. Access—Perth, under 2 miles.

Plymouth. — *Plympton House,* Plympton, South Devon. Drs. Aldridge and Turner. Access—Plympton, 1 mile: Mills, 2 miles.

See also p. 788

Portsmouth. — *Borough Asylum.* Res. Med. Supt., B. H. Mumby, M.D., D.P.H. Access—Fratton station, 1½ miles.

Prestwich (near Manchester).—*County Asylum.* Res. Med. Supt., Henry Rooke Ley, M.R.C.S.

Rainhill (nr. Liverpool).—*County Asylum.* Res. Med. Supt., J. Wiglesworth, M.D. Access—St. Helen's, 2¾ miles; Rainhill, 1 mile.

Rotherham Yorkshire). — *The Grange,* near Rotherham. 5 miles from Sheffield (for ladies). Con. Phys., W. C. Clapham, M.D. Res. Phys., G. E. Mould, M.R.C.S., L.R.C.P. Access—Grange Lane station, ¼ mile. *See also p.* 790.

Salisbury.—*Fisherton House Asylum* Med. Supt., W. C. Finch, M.D. Acc.—Salisbury Stat., 5 minutes.

See also p. 786.

Laverstock House. Prop., J. Haynes; Med. Supt., Hy. J. Manning, M.R.C.S.

Shrewsbury.—*Salop & Montgomery Counties Asylum.* Res. Med. Supt., A. Strange, M.D. Access—Shrewsbury station, 2½ miles.

Sligo.—*District Asylum.* Res. Med. Supt., Dr. Joseph Petit. Access—Sligo station, 1½ miles.

Stafford. — *County Asylum.* Res. Med. Supt., Dr. J. W. S. Christie. Access—Stafford, 1 mile.

Institution for the Insane, Coton Hill. Res. Med. Supt., Dr. R. W. Hewson. Acc.—Stafford, 1 mile.

Starcross (near Exeter).—*Western Counties Idiot Asylum.* Res. Supt., E. W. Locke. Access—Starcross station, 5 minutes

Stirling.—*District Asylum.* Med. Supt., Dr. George M. Robertson Access—Larbert, 1½ miles.

St. Alban's (Hill End). *Herts County Asylum.* Med. Supt., A. N. Boycott, M.D.

St. Leonards-on-Sea. — *Ashbrook Hall*, Hollington (for ladies). Res. Props., Mrs. Hitch and Miss Adams. Med. Supt., Dr. W. H. Davis. Access—Warrior Square Station, 2 miles.

Stone (near Aylesbury).—*Bucks County Asylum.* Res. Med. Supt., J. Humphry, M.R.C.S. Access—Aylesbury station, 3¼ miles.

Sutton (Surrey).—*Chalk Pit House* (for 3 lady patients). Prop., F. D. Atkins, M.R.C.S.

Tamworth (Staffs.). — *The Moat House* (for ladies). Res. Prop., E. Hollins, M.A. Med. Attnds. J. Holmes Joy, M.D., and C. H. Joy, M.D. Access—Tamworth, ¾ mile. *See also p.* 789.

Taunton.—*Somerset & Bath Asylum*, Cotford, near Taunton. Res Med. Supt., Mr. H. T. S. Aveline Access—Norton Fitzwarren stat., 2 miles.

Ticehurst (Sussex). — *Asylum.* Props., H. F. H. Newington, M.R.C.P., and A. S. L. Newington, M.B.

Tonbridge. — *Redlands.* Res. Med. Supt., W. A. Harmer. Access—Tonbridge junc., S.E.R., 2½ miles.

Virginia Water.—*Holloway Sanatorium*, Hospital for the Insane. St. Ann's Heath. Res. Med. Supt., W. D. Moore, M.D. Asst. Med. Officers, Dr. W. Tinker, T. E. Harper, L.R.C.P., Rosina C. Despard, M.D., and N. E. Thomas, L.R.C.P. Access — Virginia Water sta., 5 minutes. Seaside Branch, Hove Villa, Dyke Rd., Brighton. Med. Officer, E. N. Edwards, M.R.C.S. *See also p.* 793.

Wadsley (near Sheffield).—*South Yorkshire Asylum.* Res. Med. Supt., W. S. Kay, M.D. Access—Wadsley Bridge, 2 miles.

Wakefield.—*West Riding Asylum.* Res. Med. Supt. and Director, W. Bevan Lewis, L.R.C.P., Lon. Access—Kirkgate and Westgate station, 1 mile.

Wallingford (Berks). — *Berks County Asylum.*—Res. Med. Supt., J. W. A. Murdoch, M.B. Access—Cholsey, 1 mile.

Warwick.—*Midland Counties Idiot Asylum*, Knowle, nr Birmingham. Res. Supt. and Sec., W. G. Blatch. Med. Off. R. H. Foster, M.R.C.S. Acc.—Knowle, ½ mile.

Waterford. — *District Asylum.* Res. Med. Supt., J. A. Oakshott, M.D. Access—Waterford and Kilkenny sta., 2 miles.

St. Patrick's Inst., Belmont Pk. Conducted by the Brothers of Charity. Med. Supt., Dr. W. R. Connolly.

Wells.—*Somerset and Bath Asylum*, Wells, Som. Res. Med. Supt., A. Law Wade, M.D. Access—Wells, 2 miles; Masbury, 2½ miles.

Whitchurch (Salop).—*St. Mary's House* (ladies only). Res. Med. Supts., S. T. Gwynn, M.D., and C. H. Gwynn, M.D. Access—Whitchurch station, 1 mile.

Whitefield (near Manchester.)—*Overdale.* Res. Med. Supt., J. Holmes, M.D. Access—Prestwich and Whitefield sta., 1½ miles; Molyneux Brow, ¼ mile.

Whittingham (nea Preston).—*County Asylum.* Res. Med. Supt., Dr. Frank Perceval. Access—Grimsargh station, 1¾ miles; Whittingham station, 3 minutes.

Winchelsea (Sussex). — *Periteau House*, near Hastings (5 ladies). Prop., Mrs. R. V. Skinner. Med. Supt., E. W. Skinner, M.D. Access—Winchelsea stat., 1 mile.

Woking.—*Surrey County Asylum*, Brookwood. Res. Med. Supt., Dr. J. E. Barton. Access—Brookwood station, 1¼ miles.

Worcester.—*County & City Lunatic Asylum*, Powick. Res. Med. Supt., Dr. G. M. P. Braine-Hartnell. Access—Worcester 4 miles.

York. — *The Pleasaunce,* Heworth Moor. Prop. and Med. Supt., G. I. Swanson, M.D. Access—York, 1½ miles.

The Friends' Retreat. Res. Med. Supt., Bedford Pierce, M.D. Access—York, 1 mile.

North Riding of Yorkshire Asylum. Res. Med. Supt., J. Tregelles Hingston. Access—York, 2 miles.

York Lunatic Asylum, Bootham. Res. Med. Supt., C. K. Hitchcock, M.D. Access—York, 1 mile.

TRAINING INSTITUTIONS.

Bath.—*Rock Hall House,* Combe Down, near Bath. A training inst. for backward and imbecile children. Lady Supt., Miss Jane Quinton. Med. Off., J. H. H Lawrence, M.R.C.S. Clerk, E. N. Fuller, LL.B., Bath.

Chilcompton (nr. Bath).—*Downside Lodge.* Med. Supt., Alex. Waugh, M.D. Access—Chilcompton station, about ¼ mile.

See also p. 797.

Dublin.—*Stewart Institution,* Palmerston, Chapelizod, Co. Dublin. For imbecile children. Med. Supt., Dr. F. E. Rainsford.

Dundee.—*Baldovan Asylum.* For the Training and Education of Imbecile Children. Matron, Miss Butter. Med. Off., Dr. Greig. Access—Baldovan, 1 mile.

Kingston-on-Thames (Surrey). — *Conifers,* for the Education and care of Girls needing special oversight under medical guidance. Med. Supt., Dr. Langdon Down. Access—Hampton Wick station. 8 minutes.

Normansfield. A Training Institution and Home for backward and feeble-minded children and adults of either sex. Res. Med. Supt., Dr. Langdon Down. Access—Hampton Wick, 5 minutes.

Trematon. For the Education of Boys unsuited by mental or moral weakness for an ordinary school. Med. Supt., Dr. Langdon Down. Access—Hampton Wick station, 5 minutes.

Winchester House, Kingston Hill. For backward and feeble-minded Children. Res. Med. Supt. Dr. Fletcher Beach. Acc.—Norbiton, S.W.R., 15 min.

See p. 794

Lancaster.—*Royal Albert Asylum* (for idiots and imbeciles of the Northern Counties. 600 patients) Principal and Sec., Jas. Diggens Res. Med. Officer, Dr. A. R. Douglas. Admission by election, or at various rates of payment. Access —Lancaster, 1 mile.

Brunton House. A Home for special Private Pupils under training at the Royal Albert Asylum. Private Pupils received from all parts of the country. Prin. and Sec. James Diggens Access as above.

Larbert (Stirlingshire). — *Scottish National Inst.* (for Education of imbecile Children). Res. Supt., A. A. Skene. Med. Officer, Dr R. D. Clarkson. Sec. & Treas., A. J. Fitch, Virginia buildings, Glasgow. Access—Larbert, ¾ ml.

Maidstone (Kent).—*Bearsted House.* School and Home for the Feeble-minded. Res. Supt. and Prop., G. T. A'Vard. Access—Bearsted, C. and D.R., 5 mins.

Richmond (Surrey). — *Ancaster House,* Richmond Hill. A small and select Educational Establishment for backward and mentally-feeble children (*not* idiots). Res. Med. Supt., G. E. Shuttleworth, B.A., M.D. Access—Richmond, S.W.R., Met. Dist. & N.L.R., 1 mile.

See also p. 782.

Southgate (Middlesex). — *Brook House.* For Education & Training of the nervous and backward. Res. Med. Prop., Harry Corner, M.D.

See also p. 793.

Inebriate Homes.

LICENSED UNDER THE ACTS, 1879-1898.

The patient must sign a Form expressing a wish to enter the Home, before a magistrate. This can be done at the private residence of the patient, or at the retreat, if previous notice has been given. Two friends must also sign a declaration that they consider the patient an "Inebriate" within the meaning of the Acts.

* NOTE:—Chiswick is a Roman Catholic Religious Institution.

MALES ONLY.

Buntingford (Herts).—*Buntingford Retreat* (Patients 35). Gentlemen only. Terms 25/- to 45/- per week inclusive. Res. Med. Licensee, Norman Davis, M.D. Access—Buntingford (G.E.R.), ¼ mile.

Dinas Mawddwy (Merionethshire). *Plâs-yn-Dinas* (Patients 18). — Res. Med. Supt. and Licensee, Dr. W. F. Walker. Access—Dinas Mawddwy, ½ mile. *See also p.* 795

Folkestone. — *Capel Lodge* (Patients 10). Res. Prop., E. Norton, M.D. Access—Folkestone Junction, 2 miles.

Rickmansworth (Herts).—*Dalrymple Home* (Patients 20). Res. Med. Supt., F. S. D. Hogg, M.R.C.S. Access — Rickmansworth station, Metropolitan Railway, ½ mile; L. & N.W. Railway, 1 mile. *See also p.* 796

Sutton Coldfield (Warwickshire).—*Aston Hall* (Patients 10). Res. Gen. Manager, Mr. J. Robertson Corner. Access—Sutton, 4 miles; Walsall, 6 miles; Birmingham, 11 miles. *See also p.* 797

Twickenham.—*High Shot House*, (Patients 12). Res. Med. Supt., A. E. Neale, M.B., B.S. Access—St. Margaret's station from Waterloo, 300 yards; Richmond, 1½ miles. *See also p.* 798

MALE AND FEMALE.

Amesbury (Wilts). — *Amesbury House* (Patients 3). Res. Supt. and Med. Officer, P. J. Barcroft, M.R.C.P., F.R.C.S. Access—Salisbury, 8 miles; Porton station, 4 miles. *See also p.* 797

Bristol. — *Royal Victoria Homes*, Brentry. (Patients 50). Res. Sup., the Warden. Med. Off., Dr. Ormerod. Access—Clifton Down station, 3½ miles.

Westgate-on-Sea. — *Tower House Retreat* (Patients 20). Prin., Dr. James Cheese. Sec., T. Bridgman Smith. Access—Westgate-on-Sea, 5 mins. *See also p.* 798

FEMALES ONLY.

Bristol. — *Royal Victoria Homes*, Horfield Home (Patients 20). Access—Ashley Hill, Montpelier, & Redland stations, 10 minutes; Bristol (Temple Meads) 3¼ miles.

Chiswick.*—*St. Veronica's Retreat* (Patients 40). Under the care of the Sisters of Nazareth. Med. Supt., John J. Atteridge, M.D. Access—Chiswick station, ½ mile.

Cradley Heath (Staffs.) — *Corngreaves Hall* (Patients 20). Lic., Rev. J. H. Richards. Med. Offcr., Dr. Arkwright. Access—Cradley and Old Hill Stations, 1 mile.

Croydon. — *Addiscombe Lodge*, 71, Lr. Addiscombe Rd. (Patients 7). Licensee, J. M. Hobson, M.D. Access, East Croydon, 10 mins.

Fallowfield.—*The Grove Retreat*, near Manchester (Patients 25). Licensee, Mrs. M. Hughes. Med. Offs. A. T. Wilkinson, M.D., J. W. Hamill, M.D., and Dr. Margaret Bell. Access—Fallowfield, 10 minutes. *See also p.* 798

Herne Hill.—*Ellison Lodge*, Half Moon Lane (Patients 10). Res. Supt. Miss Hogg.

Leicester. — *Melbourne House.* (Patients 10). Prop., Mr. H. M. Riley. Med Supts, C. J. Bond, F.R.C.S., and J. Headley Neale, M.B., M.R.C.P. Station, 2 miles. *See also p.* 798.

South Cave, Yorks.—*The Hermitage* (Patients 10). Res. Supt., the Matron.

Stretford (near Manchester).—(Patients 10). Supt. Mrs. E. Pritchard.

Wandsworth.—*Northlands Retreat*, North St., Old Wandsworth, S.W. (Patients 5). Supt., Mrs. E. A. Blackmore.

HOMES CERTIFIED UNDER THE INEBRIATES ACT, 1898.

Male and Female.

Bristol. — *Royal Victoria Homes*, Brentry. Beds 261, for cases under Sec. I. & II. of the Act. Res. Supt., The Warden. Med. Officer, Dr. Ormerod. Access—Clifton Down, Redland, or Patchway Stations, 3½ miles.

Females Only

Ashford (Middlesex).—*St. Joseph's Home.* Beds 75, for Roman Catholic cases under Sec. II of the Act. Res. Supt., The Mother Superior. Med. Supt., A. J. Anderson, M.B. Access—Ashford, 1 mile.

UNLICENSED HOMES.

Females Only *(except Bristol, Highgate, and Stonehaven).*

Bristol.—*Dunmurry*, Sneyd Park, near Clifton. Res. Med. Prop., Jas. Stewart, B.A., F.R.C.P. Ed., and Mrs. Stewart. Access—Bristol or Clifton Down sta., 1¼ mile from the latter.

Croydon.—*St. Raphael's*, Woodside. Supt., The Matron. Access—Woodside station, Croydon.

Dunvegan, Skye, N.B.—*Cuchulin House.* Res Med. Supt., Wm. Stephen, M.A., M.D. Access—Kyle Akin.

Durham. — 25, Aldergate. Hon. Sec., Miss King.

Edinburgh.—*Queensberry Lodge.* Supt., Major Macartney. Med., Supt., Dr. William Russell. Access—Waverley station, ½ mile. *See also p.* 796

Highgate.—*Moreton*, Highgate, N. Res. Med. Supt., C. A. McBride, M.D. Access—Highgate station, 3 mins.

Hounslow (Middlesex). — *West Holme.* Supt., Matron in Charge. Med. Supt., Dr. G. A. S. Gordon. Access — Richmond (Surrey), 4 miles; Staines (Middlesex), 4 miles; Hounslow, (S.W.R.), ¾ Dist. R. ¼ mile.

Huddersfield (Yorks).—*High Flatts Sanatorium.* Supt., The Matron. Access—Denby Dale, 1½ miles; Penistone sta., 3½ miles

Leicester.—*Tower House.* Prop., Mrs. Theobald. Med. Attendant, Dr. Clarke. Access—Leicester stat., 1½ miles. *See also p.* 796

Liverpool.—*Temperance Home*, 318, Upper Parliament Street. Supt., Miss A. J. Wilson. Med. Supt., C. Soloman, M.R.C.S.

Reigate (Surrey).—*Duxhurst.* Supt., Sister in charge. Med. Supt., A. Walters, M.R.C.S. Access—Reigate, 4 miles

Stonehaven (N.B.) — *Elsick House.* Prop., D. Forbes. Med. Supt., Dr. Leslie. Access—Newton Hill station, 1½ miles.

Sydenham. *-The Tor.* Hon. Sec., Mrs. Atkinson. Med. Supt., Dr. Gardener.

Torquay. — *Temple Lodge.* Hon. Sec., Mrs. Erskine. Med. Supt., Dr. T Finch.

West Derby (near Liverpool).—*Vergmont Sanatorium.* Supt., Miss Mary M. Hocking. Hon. Med. Offis., Dr. H. Harvey and Dr. C. Thurstan Holland. Access—West Derby, ¼ mile; Tue Brook, ¼ mile; Edge Hill, 3 miles.

Hydropathic Establishments of Great Britain.

We wish to make this list complete, but it is impossible when some Proprietors do not return our letter of enquiry which is *stamped for reply.* This will account for some omissions in the present edition.

Aberdeen. — *Deeside Hydropathic*, Murtle, near Aberdeen. Res. Med. Supt., Alex. Stewart, M.D., LL.D., F.S.Sc. Access Rail to Aberdeen, thence to Murtle station on the Deeside line, 5 miles from Aberdeen; from this station, 8 minutes. *See also p.* 806.

Baslow. — *Baslow Hydropathic*, near Chatsworth Park. Res. Med. Supt., E. M Wrench, F.R.C.S. Access—Bakewell station, 4 miles by 'bus.

Bath. — *Lansdown Grove House*, Lansdown, Bath. (Invalids only). Med. Supt., Dr. Percy Wilde. Access—Mid. or G.W. stat., Bath, about 1 mile. *See also p.* 804.

Ben Rhydding. — *Ben Rhydding*, Near Leeds, Bradford, or Harrogate. Phys. Thos. Scott, M.D. Access—Station, a few hundred yards.

Bishops-Teignton (near Teignmouth).—*The South Devon Health Resort.* Prop., C. F. Carpenter. Med. Supt., J. Wood, M.B. Access—Teignmouth 2½ mile.

Blackpool. — *Matlock Hydro and Boarding House*, Station Road. Access—3 minutes' walk from South Shore station.

Prop., W. Bramald. Summer and Winter Residence; fine bracing air; sea view; close to Victoria Pier.

Bournemouth (Hampshire).—*Bournemouth Hydropathic.* Res. Prop., W. J. Smyth, M.D. Access—East sta. 1½ mile; West sta. ¼ mile. *See also p.* 807.

Southcliffe. Res. Prop., E. P. Philpots, M.D. Situation unique, cliff edge, facing sea and pier. Every modern luxury and comfort for visitors requiring perfect domestic surroundings. Prospectus free on application.

Bridge of Allan.—*Bridge of Allan Hydropathic Co.* Mngr, H. B. Higgins. Access—Station, ½ mile.

Bristol.—*The Bristol Hydropathic* (formerly Bartholomew's Turkish Baths), College Grn. Res. Phys., W. J. Spoor, M.B., M.R.C.S.

Burgess Hill (Sussex).—*Weidhaas Hydro.* Prop., Mr. R. Haynel,

Bute.—*Kyles of Bute Hydropathic*, Port Bannantyne, Rothesay. Man., A. Menzies. Med. Supt., Dr. A. J. Hall. Access—Clyde steamers call daily.

Buxton.—*Buxton Hydropathic.* Man. Director, Mr. H. Lomas. Access Station, 4 minutes.

Cerber Hill Hydro, Clarendon House. Man., Miss L. Adams. Access—Buxton station, 5 mins.

Haddon Hall and Haddon Grove Hydros. Prop., Mr. G. E. Hall.

Clevedon (Somerset).—*Clevedon Hydropathic.* Med. Supt., R. T. Morgan. Access—Clevedon, 1 mile.

Clifton (near Bristol).—*Clifton Spa & Hydropathic.* Res. Phys. C. J. Whitby, M.D. Access—Clifton Down station, 1 mile; Bristol station, 1½ miles.

See also p. 805.

Cork.—*St. Ann's Hill Hydropathic.* Res. Phys., Dr. A. G. Bennett. Access—Blarney Station, 2½ miles. Muskerry Light Railway from Cork station on grounds.

Crieff.—*Strathearn House* (17 miles from Perth). Res. Med. Supts., Thos. H. Meikle, M.D., J.P., and T. Gordon Meikle, M.B., C.M. Access—Crieff station, 1 mile.

Dunblane.—*Dunblane Hydropathic*, Perthshire. Res. Phys. Access—Dunblane station.

See also p. 802.

Edinburgh.—*Hydropathic.* J. Bell, Man. Dir. Access—Merchiston, 1 mile; Waverley, 3 miles.

Forres.—*Cluny Hill Hydropathic.* Access—Forres station, 1 mile; Inverness, 24 miles.

Grange-over-Sands.—*Hazelwood Hydropathic.* Physicians, Richard Lowther, M.D., and Owen Gwatkin, M.R.C.S. Access—Carnforth, L. & N.W.R., and thence by Furness Railway. Grange-over-Sands, ¼ mile.

Harrogate (Yorkshire).—*Harlow Manor Hydro.* Man. Mr. Fenn, Med. Supt., Dr. Dimmock.

The Cairn Hydropathic. Near Leeds and Bradford. Man., Mrs. Baker. Access—Harrogate, ½ ml.

The Harrogate Hydropathic. Ph[illegible]., Geo., Tennant, M.B. Access—Harrogate, ½ mile.

Hastings (St. Leonards).—*The Hastings Hydropathic and Spa.* Access—Hastings station, 1 mile.

Hexham (Northumberland).—*Tyndale Hydropathic.* Prop., F. G. Grant. Med. Supt., Dr Stewart. Access—Hexham, 1 mile; Newcastle, 19 miles.

Ilkley (Yorkshire).—*Craiglands Hydropathic.* Props., Dobson, Bros. Res. Med. Supt., Henry Dobson, M.D., C.M.

Ilkley Wells House Hydropathic. Med., Supt. Thos. Scott, M.D. Manager, Mr. Ballardie. Access—Ilkley station, ¾ mile.

The Spa Hydropathic. Near Leeds and Bradford. Med. Supt., Thos. Johnstone, M.D. Access—Ilkley, Yorks. M., G.N. & N.E.R., Ilkley, 3 minutes.

Kilmalcolm (Renfrewshire).—*Hydropathic.* Manageress, Miss G. Thomson. Access—Greenock, 7 miles; 16 miles from Glasgow, S.W.R.

Limpley Stoke (near Bath).—*West of England Hydropathic.* Res. Med. Supt., T. G. Drake, L.R.C.P. Access—Limpley Stoke station.

Lincoln.—*Northcote Hydro.* (Woodhall Spa).—Apply to secretary.

Liverpool.—*New Hydro Hotel*, West Kirby. Res. Med. Supt., Dr. P. J. Wilkinson. Access—West Kirby station, 5 miles.

See also p. 807.

Llandudno.—*Hydropathic and Winter Residence.* Med. Supt., James Craig, M.B. Access—Llandudno Station, 5 minutes.

Malvern.—*The Malvern Hydropathic.* Res. Prop., J. C. Fergusson, M.D. Access—Gt. Malvern station, ½ mile.

See also p. 803.

Wyche-side Hydropathic. Res. Phys., Dr. Grindrod. Access—Malvern Wells, G.W.R., ½ mile.

Matlock.—*Darley Dale Hydropathic.* Prop., William Atkin. Med. Supt., Dr. W. Moxon. Access—Matlock Bridge station, 1¾ mile; Darley Dale, ½ mile.

Matlock House Hydropathic. Matlock Bank. Med. Supt., W. Moxon, M.D., M.R.C.S. Access—Matlock Bridge (M.R.), ¼ mile.

Smedley's Hydropathic. Matlock Bridge. Phys., W. C. Sharpe, M.D., and a Res. House Phys. Access—Matlock Bridge station, ½ mile; Omnibus. *See also p.* 800.

Melrose.—*Waverley Hydropathic.* Con. Phys., Dr. Wade. Access—Melrose station, 1 mile.

Moffat.—*The Moffat Hydropathic.* Prop., J. Farquharson. Med. Supt., Dr. T. B. White.

Peebles.—*Peebles Hydropathic and Hotel.* Medical Specialist. New Department now complete with Douche and Massage, with the new Electric Light Therapy, Pure Air and Sun Baths, Earth Treatment, and Kneipp's Meadow—the first in Great Britain. Access—Peebles station, ¾ mile.

See also p. 801.

Pitlochry.—*Atholl Hydropathic.* Prop., W. Macdonald. Closed in winter. Access—Pitlochry 1 ml.

Rhyl.—*Claremont Hydropathic.* Med. Supt., Dr. R. M. Prichard.

Rothesay.—*Glenburn Hydropathic.* Res. Phys., Dr. Philp.

See also p. 802.

Scarborough.—*Hydropathic*, West Bank. Prop., R. B. D. Wells. Med. Att., Dr. Megginson. Access—Scarborough (N.E.Ry.), ¼ hour.

Shandon.—*Shandon Hydropathic.* Med. Supt., Dr. Douglas Reid. Access—N.B.R. and Steamer.

Skelmorlie.—*Wemyss Bay Hydropathic.* Med. Sup., Ronald Currie, M.D. Access—Wemyss Bay sta., ½ mile.

Southport (Birkdale Park).—*Smedley Hydropathic.* Med. Supt., J. G. G. Corkhill, M.B., B.Ch. Vict., M.R.C.S. Eng. Southport or Birkdale stats. *See also p.* 807.

Kenworthy's Hydropathic (51, Bath Street). Phys., Dr. A. B. Kenworthy. Access—Chapel St., Lord St., or Central stat., ¼ mile.

"Sunnyside" Hydropathic. Prop., J. Boocock. Phys., Dr. F. A. Ernest Barnardo. Access—Southport stats., ½ mile.

Tunbridge Wells.—*The Spa.* Phys., Dr. G. L. Pardington. Access—Station, about ½ mile.

Ulverston and Barrow-in-Furness.—*Conishead Priory Hydropathic.* Access—Ulverston station.

Watford.—*The Hall*, Bushey. Man., Col. Coyne. Med. Supt., Dr. F. Smith. Access—L. & N.W. Ry. 1 mile.

Windermere.—*Windermere Hydropathic*, 9 miles from Kendal. Access—Windermere (L. & N.W. R.) 1 mile. Furness Rly. (Bowness Landing), ¼ mile. Pier on Lake, about 300 yards.

Private Homes for Invalids, & Sanatoria.

Bournemouth.—*Victoria Home*, Cambridge Road. Apply the Matron. *See also p.* 781.

Brighton.—*Stavely House*, 24, Wilbury Road, Hove. Medical and Surgical Home for paying patients. Weir-Mitchell — massage — doctors' references. Access—Brighton station, 1½ mile, Hove, 1 mile.

Bristol.—*Nordrach-on-Mendip*, Blagdon, near Bristol. Res. Phys., R. Thurnham, M.D., and Neville C. Gwynn, M.B.

Evesham (Worcs.).—*Greenhill.* Principal, Mrs. Hoddinott. Access—Mid. and G.W.R. stations, Evesham.

Farnham, Surrey. — *Crooksbury Sanatorium.* Res. Phys., Dr. Walters. *See also p.* 780.

Whitmead Hill, near Farnham. Res. Phys., J. Hurd-Wood, M.D. *See also p.* 781.

Folkestone.—*Haverstock Temperance Boarding House,* Claremont Road. Prop., Miss Woodward. *See also p.* 779.

Hadlow Down (Buxted, Sussex). —*South Beacon.* Prop., Philip H. Harmer. For the care and treatment of ten gentlemen mentally affected, but who are not ill enough to be certified. Fifteen years' experience. Access—Buxted, 3 miles; Heathfield, 4 miles.

Jedburgh.—*Abbey Green.* Res. Prop., Wm Blair, M.D. Access—N.B.R., Jedburgh. *See also p.* 780.

London.—*Clapton Surgical and Medical Home,* 10 Southwold Road, Upper Clapton. Apply Lady Supt. *See also p.* 783.

Netley House, 15, Henrietta St., Cavendish Square, W. Apply Sister-in-charge. *See also p.* 783.

Nursing Home, 29, Upper Montagu Street, W. Prop., Mrs. Bounsall. Access—Baker Street station (Metropolitan), 5 minutes.

Private Medical and Surgical Home for open-air combined with inhaling treatment of chest diseases, 23 & 25, Clapton Common. Res. Med. Supt., Dr. Hy. J. Buck.

St. Thomas's Home, St. Thomas's Hospital, Albert Embankment, S.E. Apply The Steward, St. Thomas's Hospital, S.E. *See also p.* 779.

Penzance.—*St. Winifred's,* Marazion. Prop., Miss W. Leicester St. Aubin. Access—Marazion station, ¾ mile; Penzance, 3 miles.

Plymouth.—*Woodside House,* 4, Woodside. Lady Supt., Miss E. Olphert. Registered telegraphic address, "Woodside, Plymouth," Nat. Telephone, No. 342. Eight private rooms. Access—Mutley station—five minutes' drive.

Shotley Bridge (Co. Durham).—*Bellevue Sanatorium.* Res. Phys., Dr. E. W. Diver. *See also p.* 781.

Stanmore, Middlesex.—*Mary Wardell Convalescent Home for Scarlet Fever.* Med. Off., J. D. Thomas, M.B. Hon. Sec., Miss M. Wardell. Access — Stanmore. (L. & N.W.R.), 2 miles. *See also p.* 779.

Torquay. — *Coombehurst Medical Home,* Newton Rd., Torre. Open-Air Treatment for Consumption. Access—Torre and Torquay stations, 3 minutes.

Warrenpoint (Co. Down).—*Rostrevor Sanatorium.* Apply Res. Phys. *See also p.* 781.

Wells (Somerset). — *Hill Grove,* over Wells. Res. Phys., Chas. J. Whitby, M.D. *See also p.* 781.

Nursing Institutions and Associations.

The information given here is necessarily brief: but further particulars may be added, in small type, at the rate of 2 - per dozen words.

LONDON.

Baker Street Association of Trained Nurses (Regd.), 15, Baker Street, W. Supt., Miss Masters.

Telegraphic Address—"Womanly, London." Telephone No. 1010, Paddington.

Belgravia Nursing Home, 39 and 41, Royal Avenue, Chelsea, S.W. Principals—Mrs. Walter Pye and Mrs. Richard Crawley.

Surgical, Medical non-infectious, Confinement, & Weir-Mitchell cases received. Terms from 5 to 12 guineas per week. Fully qualified Nurses also sent out.

Blackheath Nursing Inst., 9, Montpelier Row, Blackheath, S.E. Supt.—Miss Duncan.

Brompton Hosp. Private Nursing Department, S.W. Mrs. Price, Lady Supt.

Clapham, Brixton & Surrey Inst. of Trained Nurses, 210, Clapham Road, S.W. Supt., Mrs. A. M. Pyle.

Clapham Common Home & Nursing Inst., 43, South Side, Clapham Common, S.W. Supt., Mrs. Chapman.

Clapton Medical and Surgical Home, 10 Southwold Rd., Upper Clapton.

Colonial Nursing Assoc., Imperial Institute, London, S.W. Hon. Sec., Mrs. Francis T. Piggott.

Elgin Nursing Inst., The, 258, Elgin Avenue, W. Supt., Miss Ellison.

General Nursing Institute, 5, Mandeville Place, Manchester Square, W.

Guy's Hospital Trained Nurses' Inst., 14, St. Thomas Street, S.E.

Hamilton Assoc. for Providing Trained Male Nurses, 57, Park St., Grosvenor Sq., W. Supt.—G. H. Henlen. *See also p.* 780.

Hampstead Hospital Nursing Staff, Parliament Hill, N.W. Lady Supt., Mrs. Ebbetts.

Hanover Inst. for Nurses and Private Hosp., 22, George St., Hanover Square, W. Lady Supt., Miss Sophia Walker.

Supplies the public with thoroughly reliable Nurses. The Hospital receives patients for treatment under their own physicians or surgeons. Terms on application.

Holy Cross Society of Trained Nurses, 2 Ladbroke sq., Notting Hill, W. Lady Supt., Sister Clare.

Hooper, Miss, *Nurses Institution*, 9, Upper Baker Street, N.W.

Medical, Surgical or Fever Nurses supplied.

Hospital for Sick Children, Private Nursing Home, Gt. Ormond St., W.C. Matron, Miss Gertrude Payne.

London Association of Nurses, 123, New Bond St., W. Lady Supt., M. Firth.

London Homœopathic Hospital Nursing Inst., Great Ormond St., W.C. Lady Supt., Miss Brew.

London Hospital Private Nursing Inst., Whitechapel Road, E. Matron, Eva C. E. Luckes.

Male Nurses (Temperance) Co-operation, 10, Thayer Street, W. Sec., F. Rouse.

Maternity Charity and District Nurses' Home, Howard's Road, Plaistow, E. Monthly Nurses supplied. Matron, Miss K. Twining.

Medical & Surgical Home & Nursing Inst., 39 & 41, Boundary Road, N.W. Supts., Mrs. Dalison and Miss Coleclough.

Medical and Surgical Home and Nursing Inst., Netley House, 15, Henrietta Street, W.

Metropolitan Nursing Assoc., 23, Bloomsbury Sq. For nursing the Sick Poor. Supt., Miss Haddon.

Middlesex Hospital Institute, 17, Cleveland Street, W.

Midwives' Inst., 12, Buckingham St., Strand, W.C. Apply Sec.

Competent Midwives (L.O.S.), Monthly Nurses, Masseuses (Incorporated Society of Trained Masseuses supplied. Pupils prepared for L.O.S. and Incorporated Masseuses examination. Telegrams: "Fregare, London."

Mildmay Deaconess Inst., Nursing branch, 9 & 10, Newington Green, N. Supt., Miss Carter.

See also p. 778.

Nervous & Mental Disorders, Nurses for, 1 Culross Street, Grosvenor Sq., W. Supt., Mrs. Caldwell.

Nursing Sisters' Inst., 4, Devonshire Sq., E.C. Lady Supt., Miss Hulme.

Paddington and Marylebone District Nursing Association, 4, Randolph Road, W. Supt. Miss K. Perssé. Hon. Secs., Mr. W. F. Richmond and Miss G. H. Richmond.

Pembroke Nursing Inst. and Home for Paying Patients, 116, Adelaide Road, N.W. Matron, S. Gee Wright, cert. L.O.S.

Queen Victoria's Jubilee Inst. for Nurses, St. Katherine's, Regents Park, N.W. For supplying trained District Nurses for the Poor. Supt., Miss Pekr.

Registered Nurses' Society, 269, Regent Street, W. Sec., Miss Cartwright.

Royal British Nurses' Assoc., 17, Old Cavendish Street, W.

St. Bartholomew's Hosp. Nurses Institute, 13, West Smithfield.

St. John Ambulance Association, St. John's Gate, Clerkenwell.

See also p. 778.

St. John's, 21, Drayton Gardens, S. Kensington. Sist. Superior, A. J. Beaver.

St. John's House, 7 & 8, Norfolk St., Strand. Supt., the Sister Superior.

Southwark, Newington & Walworth District Nursing Assoc. 37, West Sq., S.E. Supt., E. H. Courtenay.

Up-Country Nursing Assoc. for Europeans in India. Hon. Sec., Major-Gen. J. Bonus, R.E., Clapton Court, Crewkerne, Somerset.

Victoria Hospital, Nursing Staff, Chelsea, S.W. Matron, Miss Watson.

Medical and Surgical Nurses supplied for all cases, 42/- per week.

Westminster Home for Nurses, 27, Queen Anne's Gate, S.W. Matron, Miss Longbottom.

Wigmore Nurses' Co-operation, 59, Weymouth St., W. Princ., Florence Burrell.

PROVINCIAL.

Ayr.—*Ayr and District Sick Nursing Association.* Hon. Sec. Miss M. C. Campbell, 3, Park Circus.

Bath.—*Home for Trained Nurses,* 44, Rivers St. Lady Supt., Miss F. E. Latham.

Royal United Hospital Private Nursing Instit., Matron, S. E. Polden.

Belfast.—*Nurses' Home and Training School,* Frederick St. Lady Supt., Miss Newman.

Birmingham.—*Birmingham & Midland Counties' Training Instit.,* 12, The Crescent. Lady Supt., Miss M. D. W. Ewing.

Birmingham & Midland Homœopathic Hospital. Lady Supt., Miss Bean.

District Nursing Society, 94, Moseley Road; Lady Supt., Miss Waller. 98, Newhall St.; Lady Supt., Miss Peterkin.

Queen's Hospital, External Nursing Depart. Supt., Charlotte Elkington.

Bournemouth. — *Victoria Nurses' Institute and Home Hospital,* Cambridge Rd. Matron, C. Forrest. Access—Bournemouth West stat.

Bridlington.—*Lloyd Cottage Hosp.* Supt., Miss A. Maud Jones.

Brighton.—*Home for Trained Nurses and Paying Patients,* 92, King's Road, Supt. Mrs. Frazer.

Sussex County Hospital Private Nursing Inst. Matron, Katharine Scott.

Bristol.—*District & Private Nurses' Home,* 6 Berkeley Sq., Clifton. Lady Supt., Florence E. Lloyd.

General Hospital.

Nurses' Co-operation and Home, Westbourne Place, Clifton. Supt., Miss Rogers.

Nurses' Home, 23 & 24, Richmond Terrace, Clifton. Lady Supt., Miss Thompson-Hill.

Royal Infirmary Private Nursing Inst. Matron, Miss A. B. Baillie.

Broughton and Kersal.—*Nurses' Institute and Nursing Home,* 303 and 305, Great Clowes Street, Higher Broughton. Supt., Mrs. French. Tel. 54, H. Broughton.

Patients received for treatment under own medical attendant if preferred. Medical, Surgical, Maternity, Mental and Fever Nurses supplied on application.

Burton-on-Trent.—*Nursing Inst.*, 59, Union Street. Supt., Miss M. Lambert.

Cambridge.—*Home for Nurses*, 13, Fitzwilliam St. Lady Supt., Miss Rogers.

Cheltenham.—*General Hospital* Private Nursing Staff. Matron, Miss G. Moller.

Medical, Surgical and Monthly Nurses can be supplied, on application, by letter or telegram, to the Matron. Telephone No. 26.

See also p. 778.

Chester.—*District Nurses' Home*, Water Tower St. For providing Trained Nurses for the Poor in their own Homes. Deaconess-in-charge, Sister Mabel Lloyd.

Cork.—*County and City of Cork Hospital for Women and Children.* Lady Supt., Miss M. H. Baxter.

Nursing Institution, 11, South Mall. Hon. Lady Supt., Miss Woodroffe.

Coventry.—*District and Private Nursing Inst.*, Bishop St. Matron, Miss Wing.

Derby.—*Royal Derby and Derbyshire Nursing Association*, London Rd. Lady Supt., Miss Agnes Atthill.

Devonport.—*Royal Albert Hospital Nursing Institution.* Matron, Miss Glover.

Dublin.—*City of Dublin Nursing Institute, ltd.*, 27, Upper Baggot Street. Lady Manager, Mrs. R. K. Treacy.

Dr. Steevens' Hospital Private Nursing Inst. Supt., Miss B. M. Kelly.

Redcross Nursing Sisters' House & Training School for Nurses, 87, Harcourt Street. Supt., Miss Alison Lyons.

Rotunda Lying-in Hosp. Nursing Home, Great Britain St. Lady Supt., Miss Lucy Ramsden.

St. Patrick's Nurses' Home, 101, St. Stephen's Green, for supplying Trained Nurses to the Sick Poor in their own Homes free of charge. Supt., Miss F. Franceys Howell.

Edinburgh.—*Royal Scottish Nursing Inst*, 69, Queen Street and 14, Castle St., Dumfries. Matron, Miss King.

Ordinary cases, 30 - weekly; Mental, Massage, Infectious, 42 -. Maternity, £8 8s. one month. Telegrams: "Matron, Edinburgh." Telephone 2228.

Exeter. *Devon and Exeter Hosp.* Matron, Miss E. E. Bath.

Trained Nurses' Inst. (founded 1866), Colleton House. Sec. and Supt., Miss M. Mathew.

Frome. *Home for Trained Nurses*, South Parade. Supt., Miss M. I. Briggs.

Gainsborough.—*District Nursing Assoc.* 14, Kebir Terrace.

Glasgow.—*Sick Poor and Private Nursing Association* 218, Bath St. Supt., Miss Berwick.

Training Home for Nurses, 250, Renfrew St. Hon. Supt. Miss McAlpin.

Guildford.—*Nurses' Inst. and Home for Private Patients.* Lady Supt., Miss E. M. Waind.

Harrogate.—*Trained Nurses' Inst.*, Ripon Rd. Supt., Miss Anderson.

Hereford.—*Nursing Association* for nursing the Poor free of charge in their own Homes. Hon. Sec., C. E. Moody, Breinton, Hereford.

Honiton.—*District Nursing Assoc.* for the Poor. Supt., Miss Fortescue, The Rectory.

Hull.—*Royal Infirm.* Lady Supt., Miss M. L. Rannie.

Leamington.—*Warneford, Leamington and South Warwickshire General Hospital and Bathing Institution.* Sec., Richard J. Coles.

Leicester.—*Nurses' Co-operation*, Welford Road. Supt., Miss Edis.

Nurses' Inst. Aylestone Road. Lady Supt., Miss J. M. McHardy.

Limerick.—*Barrington's Hosp. and City of Limerick Infirm.* Matron, Miss Haughton. Registrar and Treas., R. R. Parsons, Esq.

Lincoln.—*Institution for Nurses.* Lady Supt., Miss H. Bromhead.

Liverpool. — *Training School and Home for Nurses*, Ashton Street. Supt. Miss E. M. Jones.

Manchester.—*Maternity Hosp.*, 60, Upper Brook St. Matron, Miss Lancaster.

Middlesbrough. — *Nursing Assoc.*, Borough Road. Lady Supt., Miss Purvis.

Newcastle - on - Tyne. *Nurses' Home & Training School*, 2, Granville Rd. Matron, Miss Emery.

Newport. *Newport and Monmouthshire Hosp.* Matron, Miss A. J. Ainsworth.

Northallerton.—*North Riding Rural Nursing Assoc.*, Home for Nurses, Cottage Hospital Supt., Miss Georgina Atkinson.

Norwich.—*Norfolk & Norwich Hospital.* Lady Supt of Nurses, Miss D. Burroughes.

Norwich Nurses' Co-operation, 76, Prince of Wales' Road.

Oldham.—*Nursing Association, Lees Nurses' Home*, Union Street West. Supt., Miss Mary T. Nicholson.

Portsmouth.—*Royal Portsmouth Hosp.* Matron, Miss M. L. Boulton.

Preston.—*Preston & County of Lancaster Royal Infirm. Private Nurses' Home.* Matron and Supt., Miss Goffin.

Reading.—*Royal Berks Hospital*, Private Nursing Staff. Supt., Mary R. Easton.

Rochdale.—*District Nursing Assoc.*, 210, Yorkshire St.

St. Albans.—*Diocesan Institution for Private Nurses.* Matron, Miss M. Flood Jones. Nurses' Home, Witham, Essex.

St. Leonard's-on-Sea. — *Victoria Nursing Inst.*, 25, Warrior Gardens. Supt., Mrs. C. Phillips.

Salisbury.—*Nurses' Home.* Supt., Ethel Laurence.

Sheffield.—*St. George's Home for Dist. & Private Nursing*, 19, Sandon Pl. Lady Supt., S. E. Corvan.

Nurses' Home & Training Inst., 334, Glossop Road. Lady Supt., Miss Annie Armstrong.

Southampton.—*Hampshire Nurses' Inst.*, Belle Vue. Matron, Mrs. A. Varian.

Southport. *Birkdale Trained Nurses' Home*, 53, Liverpool Road. Supt., Miss M. A. Toule.

Infirmary Nursing Inst. Lady Supt., Miss Alice Clark.

Staleybridge (Cheshire).—*District Nursing Assoc.* Pres. Mrs. E. M. Dickens-Knott.

Stoke - on - Trent. — *Staffordshire Instit. for Nurses.* Lady Supt., Miss Shirley.

Stratford - on - Avon. — *Nursing Home & Children's Hosp.* Supt., Miss Annie Moseley.

Sunderland. — *Nursing Inst. and Home for Trained Nurses.* Supt., Mrs Hugh Marriner.

Surbiton, Surrey.—*Nurses' Association & Home* for Paying Patients, Claremont Road. Matron, Miss Parnaby.

Swansea.—*General and Eye Hosp. Nursing Staff* Matron, M. Bridger

Taunton. *Victoria Jubilee Nursing Inst.* Matron, K. S. Bulteel.

Wakefield.—*Trained Nurses' Home*, 2, Wentworth Ter. Lady Supt., Miss Elizabeth Reed.

Weston-s-Mare.—*Nursing Home & Nurses' Inst.*, 4 St. Margaret's Ter. Lady Principal, Miss Moorhead.

Winchester. —*Royal Hants County Hospital.* Matron, Miss A. Gwyn.

Windsor.—*H.R.H. Princess Christian's Nurses' Home*, Clarence vils. Lady Supt., Miss M. Robin.

Witham (Essex). — *St. Alban's Diocesan Nursing Inst.* Matron, Miss Flood Jones.

Wolverhampton.—*Queen Victoria Nursing Inst.* Lady Supt., Miss Lovevs.

Worcester.—*City & County Nursing Inst.*, Tything. Lady Supt., Miss M. E. Winterton.

Worthing.—*Medical and Surgical Home*, 11, Liverpool Ter. Principal, Miss Maginn.

Wotton-under-Edge. — *Convalescent and Nursing Home.* Matron, Miss Higgins.

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BIRMINGHAM—Edmund Robinson, M.D.,* 213, Bristol Road, Edgbaston.

BRISTOL—G. S. Page, L.R.C.P.,* 78, Old Market Street.

CARDIFF—J. L. Treharne, M.R.C.S.,* 92, Newport Road.

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SHEFFIELD—William Skinner, M.R.C.S.,* 250, Brook Hill.

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Æsculapian Society—Secretary, 10, Park Lane, N.
Anatomical Society of Great Britain and Ireland—Sec., London Hospital Medical College, E.
Anthropological Institute of Great Britain & Ireland—3, Hanover Square, W.
Association for the Advancement of Medicine by Research—Secretary, 33, Harley Street, W.
Association of Registered Medical Women—Sec., 188, Marylebone Rd., W.
British Association for the Advancement of Science—Burlington House, Piccadilly, W.
British Balneological & Climatological Society—Sec., 11, Cavendish Pl, W.
British Dental Association—Secretary, 40, Leicester Square, W.C.
British Gynæcological Society—20, Hanover Square, W.
British Laryngological, Rhinological, and Otological Association—Sec., 11, Chandos Street, W.
British Medical Association—429, Strand, W.C.
British Medical Benevolent Fund—Sec., St. Bartholomew's Hospital, E.C.
British Medical Temperance Association—Sec., Carlton House, Enfield.
British Orthopædic Society—Hon. Secs., 40, Seymour Street, W., and 28, Caledonia Place, Clifton, Bristol.
Chemical Society—Burlington House, Piccadilly, W.
Clinical Society of London—20, Hanover Square, W.
Dermatological Society of Great Britain and Ireland—20, Hanover Square.
Dermatological Society of London—Secretary, 23, Lower Seymour St., W.
Entomological Society—11, Chandos Street, Cavendish Square, W.
Epidemiological Society—11, Chandos Street, Cavendish Square, W.
Geological Society of London—Burlington House, Piccadilly, W.
Harveian Society—Stafford Rooms, Tichborne Street, W.
Hunterian Society—London Institution—23, Finsbury Circus, E.C.
King's College Medical Society—King's College Hospital.
Laryngological Society of London—20, Hanover Square, W.
Linnean Society—Burlington House, Piccadilly, W.
London Hospital Medical Society—Mile End, E.
Medical Defence Union, Offices—4, Trafalgar Square, W.C.
Medical Officers of Schools Association—Secretary, Christ's Hospital, E.C.
Medical Society of London—11, Chandos Street, Cavendish Square, W.
Medico-Psychological Association—Sec., 11, Chandos Street, W.
Neurological Society—Secretary, 4, Queen Anne Street, W.
New Sydenham Society—Secretary, 15, Cavendish Square, W.
Obstetrical Society—20, Hanover Square, W.
Odontological Society of Great Britain—20, Hanover Square, W.
Ophthalmological Society of the United Kingdom—11, Chandos Street, Cavendish Square, W.
Otological Society of London—Secretary, 106, Harley Street, W.
Pathological Society of London—20, Hanover Square, W.
Pharmaceutical Society of Great Britain—17, Bloomsbury Square, W.C.
Physiological Society—Sec., C. S. Sherrington, M.D., Univ. Coll., Liverpool.
Poor Law Medical Officers' Association—Sec., 243, Hackey Road, N.E.
Röntgen Society.—Hon. Sec., F. H. Low, M.B., 12, Sinclair Gardens, W.
Royal Astronomical Society—Burlington House, Piccadilly, W.
Royal Institute of Public Health—19, Bloomsbury Square, W.C.
Royal Institution—21, Albemarle Street, Piccadilly, W.

Royal Medical Benevolent College (Epsom). Sec., 37, Soho Square, W.
Royal Medical and Chirurgical Society—20, Hanover Square, W.
Royal Meteorological Society—70, Victoria Street, S.W.
Royal Microscopical Society—20, Hanover Square, W.
Royal Society—Burlington House, Piccadilly, W.
Royal Statistical Society—9, Adelphi Terrace, W.C.
Sanitary Institute of Great Britain, with which is incorporated the Parkes Museum—74A, Margaret Street, Regent Street, W.
Society of Medical Officers of Health—107, High Holborn, W.C.
Society of Members of the Royal College of Surgeons of England—Secretary, West Hill, Putney, S.W.
Society for the Relief of Widows and Orphans of Medical Men—11, Chandos Street, Cavendish Square, W.
Society for the Study of Inebriety—Sec., 18, Harley Street, W.
"The Lancet" Relief Fund—Secretary, Strand, W.C.
Volunteer Medical Association—20, Hanover Square, W.
West London Medico-Chirurgical Society—West London Hospital, Hammersmith, W.
Zoological Society—3, Hanover Square, W.

Antiseptic Dressing Manufacturers.

Galen Manufacturing Co. Lim., Ladywell, S.E.
Liverpool Lint Co., Netherfield Road North, Liverpool
Mactarlan, J. F. & Co. 9, Moor Lane, Fore St., London, & Edinburgh
Robinson & Sons, lim., Chesterfield and London
St. Dalmas & Co., A. de, Leicester

Bottle Makers.

Curle, Jas. A., Homer Road, E.
Harris, H. & Co. 153, Upper Thames Street, E.C.
Isaacs, I. & Co. 106, Midland Road, St. Pancras
Kilner Bros., Lim., Great Northern Station, King's Cross, N.
Ruch, A. & Co., Bush Lne Hse, E.C.
Youldon, E. Great Garden Street, E.

Dietetic Articles (Manufacturers of).

Abbott, Van & Sons, 104, Wigmore Street
Allen & Hanburys, Lim., Plough Court, Lombard Street, E.C.
Appollinaris Co. Lim., 4, Stratford Place, Oxford Street, W.
Armbrecht, Nelson & Co. 71, Duke Street, Grosvenor Square
Aylesbury Dairy Co. Lim., St. Petersburgh Place, W.
Back, George & Co., Devonshire Square
Benger, F. B. & Co. Lim. Otter Works, Manchester
Blake, Sandford & Blake, 49, Dover Street, W.
Bonthron & Co. Glasshouse St., W.
Borthwick, F. L. & Co., 381, Kingsland Road, N E.
Bovril, Lim., 152-166, Old St,, E.C.
Bragg, J. L., Lim., 14, Wigmore Street, W.
Brand & Co., Lim., Little Stanhope Street, Mayfair, W.
Burrow W. & J., Malvern
Cadbury Bros., Birmingham
Callard & Co., 65, Regent Street, W.
Carnrick & Co., Lim., 24 and 25, Hart Street, W.C.
Fromms Extract Co. Lim. 4, White Hart Court, Bishopsgate Street
Fry, J. S. & Sons, Lim., Bristol & London
Hovis Co., Lim., Macclesfield
Ingram & Royle. Lim., 26, Upper Thames Street
King, Geo. & Co. Sycamore St., E.C.
Kreochyle Co., Farringdon Street

Liebig's Extract of Meat Co. Lim., 9, Fenchurch Avenue
Maltine Manufacturing Co. Lim., 24 & 25, Hart Street, W.C.
Manhu Food Co. Lim., 88, Charing Cross Road
Mellin's Food Lim., Peckham, S.E.
Möller, Peter, 18, High Holborn
Neave, J. R. & Co. Fordingbridge
Nelson, Dale & Co. Lim., George, Dowgate Hill, E.C.
Nestlé, H. 48, Cannon Street, E.C.
Pearce, C. W. & Co. 34, Finsbury Pavement, E.C.
Plasmon Syndicate Lim., 56, Duke Street, W.
Protene Co. Lim., 36 Welbeck St., W.
Robb, A. & Co., 79, St. Martin's Lane, W.C.
Scott & Bowne, Lim., Great Saffron Hill. E.C.
Sumner, R. & Co. Lord Street, Liverpool
Welford & Sons, Lim., Maida Vale, W.

Druggists

(Principal Wholesale).

Allen & Hanburys, Lim., Plough Court, Lombard Street, E.C.
Angier Chemical Co. Lim. 31 & 32, Snow Hill, E.C.
Barclay & Sons, Lim., Farringdon Street, E.C.
Barron, Harveys & Co. 6, Giltspur Street, E.C.
Battley & Watts, Cripplegate, E.C.
Blake, Sandford & Blake, 49, Dover Street
Brady & Martin, Newcastle
Buchner, Schacht and Co. 149 Houndsditch, E.C.
Bullock, J. L. & Co., 3, Hanover St., W.
Burgoyne, Burbidges & Co. 16, Coleman Street, E.C.
Burroughs, Wellcome & Co. Snow Hill Buildings, E.C.
Christy, T. & Co. Old Swan Lane, E.C.
Corbyn, Stacey & Co. 300, High Holborn, W.C.
Dakin Brothers, 87A, Leadenhall Street, E.C.
Duncan, Flockhart & Co. 143, Farringdon Road, E.C., and Edinburgh
Evans, Lescher & Webb, 60, Bartholomew Close, and Liverpool
Fassett & Johnson, 32, Snow Hill, E.C.
Ferris & Co. Bristol
Fletcher, Fletcher & Co. Lim , 469, Holloway Road, N.
Gale & Co. 15, Bouverie Street, E.C.
General Apothecaries' Co. Lim , 49, Berners Street, E.C.
Giles, Schacht & Co. 52, Royal York Crescent, Clifton, Bristol
Halviva Co. Lim., 4, Temple Chambers, E.C.
Harris Philip & Co. Lim., 144, Edmund Street, Birmingham
Hearon, Squire & Francis, Lim., 38, Southwark Street, S.E.
Hewlett, C. J. & Son, 40, 41 & 42, Charlotte Street, E.C.
Hockin, Wilson & Co. New Inn Yard, Tottenham Court Road
Hodgkinsons, Clarke & Ward, 101, Whitecross Street, E.C.
Howards & Sons, Stratford, E.
Kühn, B. 36, St. Mary-at-Hill, E.C.
Lorimer & Co. Lim. Britannia Row, N.
Lloyd, T. Howard & Co., Leicester
Macfarlan, J. F. & Co. Edinburgh, and 9, Moor Lane, Fore Street, London
Mackey, Mackey & Co. 175, Grange Road, S.E.
Maw, Son & Thompson, 7 to 12, Aldersgate Street, E.C.
Newbery, F. & Sons, Charterhouse Square and Charterhouse St., E.C.
Nicolay & Co. 36, St. Andrew's Hill, E.C.
Oppenheimer, Son & Co. (Lim.), 179, Queen Victoria Street, E.C.
Parke, Davis & Co., 111, Queen Victoria Street, W.
Potter & Clarke, 60 to 64, Artillery Lane, E.
Potter & Sacker, 7, Fowkes Buildings, Great Tower Street, E.C.

Raimes & Co., York
Reynolds & Branson, Lim., 13, Briggate, Leeds
Richards, J. M. 46, Holborn Viaduct
Roberts & Co., 76, New Bond Street, W.
Salamon & Co., Lim., Rainham
Southall, Bros. & Barclay, Limd., Birmingham.
Squire & Sons, 413, Oxford Street
Sumner, R. & Co. 50A, Lord Street, Liverpool
Symes & Co. Liverpool
Willows, Francis, Butler & Thompson, 40, Aldersgate Street
Woolley, Jas. Sons & Co. Lim, Manchester
Wright, Layman & Umney, Lim., Southwark, S.E.
Wyleys (Lim.), Coventry
Zimmermann A. & M., St. Mary-at-Hill, E.C.

Medical Transfer Agencies.

British Medical Protection Society, 8, Berners Street, W
Orridge & Co., 56, Ludgate Hill, E.C.
Scholastic, Clerical & Medical Assoc. Lim. 22, Craven Street, W.C.
Thomas, C. B. C., Devonport
Turner, Percival, 4 Adam Street, Adelphi, W.C.

Opticians.

Curry & Paxton, 195, Great Portland St., W. and Liverpool & Bristol
Priest & Ashmore, Sheffield
Ross Lim. 111, New Bond St., W.

Printers.

Johnston, W. & A. K. Edina Works, Edinburgh
Silverlock, H. 92, Blackfriars Road
Wodderspoon & Co. 7, Serle Street, W.C.
Wright, John & Co. Stone Bridge, Bristol

Publishers and Booksellers (Medical).

Baillière, Tindall & Cox, 20, King William Street, W.C.
Bale, J. Sons & Danielsson, Lim., Great Titchfield Street
Black, A. & C., Soho Square, W.
Cassell & Co. (Lim.), Ludgate Hill (and Printers)
Churchill, J. & A. 7, Great Marlborough Street
Clay William F., 18, Teviot Place, Edinburgh
Collins, Wm. Sons & Co., Lim., Glasgow and London
Cornish Bros., New St,, Birmingham
Cornish, J. E. 16, St. Ann's Square, Manchester
Fannin & Co. Lim., Grafton Street, Dublin
Glaisher, Henry J., 57, Wigmore Street, W.
Green, Wm. & Sons, Edinburgh
Griffin, C. & Co. Lim., 12, Exeter Street, Strand, W.C.
Hirschfeld Bros., 13, Furnival St., E.C.
Johnston, W. & A. K., Edina Works, Edinburgh
Kimpton, Henry, 13, Furnival St., E.C.
Lewis, H. K. 136, Gower St. W.C.
Lippincott, J. B. Co. 36, Southampton Street
Livingstone, E. & S. Teviot Place, Edinburgh
Longmans, Green & Co. 39 to 41, Paternoster Row, E.C.
Low (Sampson), Marston & Co. Lim., Fetter Lane, E.C.
Maclehose, J. & Sons, 61, St. Vincent Street, Glasgow
Macmillan & Co. Lim., St. Martin Street, W.C.
Medical Publishing Co. Lim., Bartholomew Close, E.C.
Murray, James, St. Nicholas Street, Aberdeen
Murray, John, Albemarle Street, W.
Oliver & Boyd, Edinburgh
Paul (Kegan), Trench, Trübner & Co. Lim. Charing Cross Road, W.C.
Pentland, Young J. 38, West Smithfield, E.C. and 11, Teviot Place, Edinburgh
Rebman Limited, 129, Shaftesbury Avenue, W.C.
Renshaw, Henry, 356, Strand, W.C.

Saunders, W. B. & Co., 161, Strand
Scientific Press Lim., 28 and 29, Southampton Street
Simpkin, Marshall, Hamilton, Kent, & Co. Lim., Stationers' Hall Court & Paternoster Row, E.C.
Smith, Elder & Co. 15, Waterloo Place, S.W.
Stenhouse, A. University Avenue, Hillhead, Glasgow
Thacker W. & Co., 2, Creed Lane, E.C.
Warren, Wm. M. 111, Queen Victoria Street, E.C.
Whittaker & Co. White Hart St., Paternoster Square
Wright, John & Co. Stone Bridge, Bristol (and Printers)

Sanitary Engineers.

Crapper, T. & Co. 50 to 54, Marlborough Road, S.W.
Doulton & Co. Albert Embankment
Jennings, Geo., 65 & 67, Lambeth Palace Road, S.E.
Jones, John, Church Street, Chelsea
Llewellins & James, Bristol
McDowall, Steven & Co. (Lim.), 4, Upper Thames Street, E.C.
North British Plumbing Co. 86, Newman St. Oxford St. W.
Reid, A. W. & Co. 69, St. Mary Axe
Sanitary Engineering & Ventilation Co. 65, Victoria Street, S.W.
Winser & Co. 52, Buckingham Palace Road, S.W.

Sanitary Surveyors.

Carter, H. C.E. 65, Victoria St. S.W.
Hallett Walter & Co., 102 & 104, Harrow Road, W.
London & Suburban Sanitary Survey Association, 34, Victoria St.
Sanitary Engineering & Ventilation Co. 65, Victoria Street, S.W.
Sanitary Survey Association, 85, Gower Street, W.C.
Tidman, Ed., C.E. 34, Victoria St., S.W.

Surgical Instrument and Appliance Manufacturers.

Arnold & Sons, West Smithfield
Bailey W. H. & Son, 38, Oxford St.
Brady & Martin, Newcastle-on-Tyne
Carter, Messrs., 6A, New Cavendish Street, W.
Cocking, J. T. Plymouth
Coles, William & Co., 225, Piccadilly, W.
Cox, Alfred, 108, New Bond St., W.
Coxeter, James & Son, 4 and 6, Grafton Street, W.C.
Dinneford & Co., 180, New Bond Street, W.
Domen Belts Co. 456, Strand, W.C.
Down Bros., 21, St. Thomas Street
Ernst, Fr. Gustav, 80, Charlotte Street, Fitzroy Square, W.
Evans & Wormull, 31, Stamford St S.E.
Fannin & Co. Lim., Grafton Street, Dublin
Ferris & Co. Bristol
Formalin Hygienic Co., Lim., St. Mary-at-Hill, E.C.
Gale, Geo. & Sons, Lim. Birmingham
Galen Manufacturing Co. Lim., Ladywell, S.E.
Gardner, J. & Son, Edinburgh
Gray, Joseph & Son, Truss Works, Sheffield
Grossmith, W. R. 110, Strand
Hawksley, T. 357, Oxford St. W.
Haywood J. H., Castle Gate, Nottingham
Hills & Co. 46, Newcomen Street, Boro', S.E.
Hooper & Co. 7, Pall Mall, East
Hutchinson, W. & H. Sheffield
Huxley, E. 13, Old Cavendish St., W.
Krohne & Sesemann, 37, Duke St., Manchester Square, W.
Lynch & Co. Lim. 192, Aldersgate St.
Maw, S. Son & Thompson, 7 to 12, Aldersgate Street, E.C.
Mayer & Meltzer, 71, Great Portland Street, W.
Montague, J. H., 101, New Bond Street, W.
O'Connor Extension Co., 2, Bloomsbury Street, W.C.
Reynolds & Branson, Lim., 13, Briggate, Leeds
Rogers, F. A., 327, Oxford St., W.
Salmon, H. R. 42, Beaumont St. W.
Salmon, Ody & Co. 13 & 14, Norris Street, Haymarket, S.W.

Schall, K. 55, Wigmore Street, W.
Schramm, K. R. Gt. Castle Street, Cavendish Square, W.
Scientific Instrument Co. Lim., Cambridge
Statham, H. & Co., Corporation St. Manchester
Sumner & Co., Lim., Lord Street, Liverpool
Ward, John, 246 & 247, Tottenham Court Road
Weiss, J. & Son, Lim., 287, Oxford Street, W.

Vaccine Lymph.

Lymph is supplied, free of charge, on application to National Vaccine Establishment, St. Stephen's House, Cannon Row, Westminster, London, S.W.

Arents, E. (late J. Têtu), 16, Surrey Square, Old Kent Road, S.E.
Association for the supply of pure Vaccine Lymph, 12, Pall Mall East, S.W.
Birmingham Calf Lymph Establishment, 204, Victoria Road, Aston
British Calf Vaccine Institution, 16, Coleman Street, E.C.
Dakin Bros., 87A, Leadenhall St.
Fannin & Co. Dublin
Faulkner, W. 16, Endell Street, Bloomsbury, W.C.
Ferris & Co. Bristol
Hatrick, W. & R. & Co., Glasgow.
Hime, Dr., Bradford, Yorks.
Jenner Institute for Calf Lymph, 73, Church Road, S.W.
Rebman, F. J. 129, Shaftesbury Avenue, W.C.
Renner's (Dr.) Establishment, 186, Marylebone Road, N.W.
Surgical Supply Assoc., Manchester
Wyleys, Lim., Coventry

Medical and Scientific Periodicals, etc.

American Journal of the Medical Sciences—Monthly, 20/- per annum—Hirschfeld Brothers, 13, Furnival Street, E.C.
Analyst—Monthly 1/—Baillière & Co. King William Street, W.C.
Anatomy and Physiology, Journal of—Quarterly, 24/- per annum—Griffin & Co., Exeter St., W.C.
Annals of Surgery—Monthly 2/—Cassell & Co., Lim., Ludgate Hill, E.C.
Anthropological Journal—Quarterly 5/—Kegan Paul & Co. Charing Cross Road, W.C.
Balneology, &c., Journal of—Quarterly 2/—Bale Sons, and Danielsson, Lim., Great Titchfield Street, W.
Birmingham Medical Review—Monthly 6d—Hall & English, Union Street, Birmingham
Botanical Magazine—Monthly 3/6 per annum—Reeve & Co. 6, Henrietta St., Covent Garden
Brain—Quarterly 3/6—Macmillan and Co. Lim., St. Martin St., W.C.
Braithwaite's Retrospect—Half Yearly 6/6—Simpkin & Co. Stationers' Hall Court
Bristol Medico-Chirurgical Journal—Quarterly 1/6—J. W. Arrowsmith, Bristol
British and Colonial Druggist—Weekly 3d—44 Bishopsgate Street without, E.C.
British Dental Journal and the Dentist Weekly—10/- per annum—12, Cursitor Street, E.C.
British Gynæcological Journal—Quarterly 3/6—Bale Sons, & Danielsson, Ltd., Gt. Tichfield Street, W.
British Homœopathic Society, Journal of—Quarterly, 2/6—Bale Sons, & Danielsson, Gt. Titchfield Street
British Medical Journal—Weekly 6d—429 Strand, W.C.

Chemical Industry—Journal of Society of—Monthly 30/- per annum—East Harding Street, E.C.

Chemical News—Weekly 4d—6, Creed Lane

Chemical Society, Journal of the—Monthly, 40/- per annum—Gurney & Jackson, 1, Paternoster Row, E.C.

Chemist and Druggist, the—Weekly 4d, 10/-per annum—42, Cannon Street

Chemists and Druggists, Register of—Annual 5/—17, Bloomsbury Square

Climate—Quarterly 6d—133, Salisbury Square, E.C.

Clinical Journal—Weekly 3d—Bartholomew Close

Dental Association, Journal of British—Monthly 1/—Baillière and Co., King William Street

Dental Record—Monthly 6d—6, Lexington St., Golden Square

Dental Science—British Journal of 1st and 15th, 6d—J. P. Segg & Co. 291, Regent Street, W.

Dentist, the—Weekly 2d, 6/- per annum—12, Cursitor Street, E.C.

Dentist's Register—Annually 3/9—General Medical Council, 299, Oxford Street, W.

Dermatology—British Journal of—1/- Monthly—H. K. Lewis, 136, Gower Street, W.C.

Dublin Journal of Medical Science—Monthly 2/—Fannin & Co.

Edinburgh Hospital Reports—Yearly 12/6—Young J. Pentland, Teviot Place, Edinburgh

Edinburgh Medical Jour.—Monthly 2/—Young J. Pentland, Teviot place, Edinburgh

Entomologist—Monthly 6d—54, Hatton Garden, E.C

Entomologist, Monthly Magazine—Monthly 6d—1, Paternoster Row, E.C.

Geological Magazine—Monthly 1/6—37, Soho Square, W.

Geological Society, Journal of—Quarterly 5/—Longmans & Co.

Geologist's Association's Proceedings—Quarterly 1/6—E. Stanford, 27, Cockspur Street

Glasgow Medical Journal—Monthly 2/—A. Macdougall, Mitchell Street, Glasgow

Guy's Hospital Gazette—Fortnightly 6d—42, Southwark Street.

Guy's Hospital Reports—Yearly 10/6—J. & A. Churchill, 7, Great Marlborough Street

Health—Weekly 1d—18, Catherine Street, W.C.

Homœopathic Review—Monthly 1/—E. Gould & Son, Lim., 59, Moorgate Street, E.C.

Homœopathic World—Monthly 6d—12, Warwick Lane, E.C.

Hospital—Weekly 2d—28 and 29, Southampton St., W.C.

Hygiene, Journal of—Quarterly 5/—Ave Maria Lane, E.C.

Ibis, the—Quarterly 6/—Gurney & Jackson, 1, Paternoster Row, E.C.

International Medical Magazine—Monthly, 10/6 per annum—25, Bedford Street, W.C.

Irish Medical Directory—Annually 6/—Baillière & Co. 20, King William Street, W.C.

Knowledge—Monthly 6d—326, High Holborn

Lancet—Weekly 7d—423, Strand

Laryngology, Rhinology, & Otology, Journal of—Monthly 2/—129, Shaftesbury Avenue, W.C.

Laryngoscope, the—Monthly 1/6—Baillière & Co. 20, King William Street, W.C.

Linnæan Society, Journal of—Annually 3/—14, Henrietta St.

Linnæan Society, Transactions—Irregular. Price varies—Society's Apartments, Burlington House

Liverpool Medical Chirurgical Journal 3/6—Half-yearly—H. K. Lewis, Gower Street, W.C.

Medical Age—Semi-monthly, 6/- per annum—W. M. Warren, 111, Queen Victoria Street, E.C.

Medical Annual—Annually 7/6—J. Wright & Co. Bristol

Medical Chronicle—Monthly 1/6—27, St. Ann Street, Manchester

Medical Directory—Annually 14/—J. & A. Churchill, 7, Great Marlborough Street

Medical Magazine—Monthly 1/—62, King William Street, E.C.

Medical Monthly—3d.—3, Victoria Street, S.W.

Medical Press & Circular—Weekly 5d—A. A. Tindall, 20, King William Street

Medical Register—Annually 6/—299, Oxford Street, W.

Medical Review—Monthly 1/6—12, Norfolk Street, W.C.

Medical Student's Register—Annually 2/6—54, Gracechurch St.

Medical Temperance Review—Monthly 6d 33 Paternoster Row

Medical Times & Hospital Gazette—Weekly 2d—11, Adam St., W.C.

Medicine—Monthly, 8/- per annum—W. M. Warren, 111, Queen Victoria Street, E.C.

Mental Science, Journal of—Quarterly 5/—J. and A. Churchill, 7, Great Marlborough Street

Meteorological Record—Quarterly—E. Stanford, 27, Cockspur St.

Meteorological Society, Journal of the Royal—Quarterly 5/—E. Stanford, 27, Cockspur St., S.W.

Microscopical Science, Quarterly Journal of—10/—J. and A. Churchill, 7, Great Marlborough Street

Microscopy and Natural Science, International Journal of—Quarterly 2/6—Baillière & Co. King William Street

Mind—Quarterly 3/—Williams & Norgate, Henrietta Street, W.C.

Montreal Medical Journal—Monthly 1/6—Baillière & Co., King William Street, E.C.

Naturalist—Monthly 6d—Henrietta Street, W.C.

Nature—Weekly 6d—Macmillan & Co. Lim., St. Martin Street

Nervous and Mental Diseases—Quarterly, 18/- per annum—Kegan Paul & Co. Charing Cross Road, W.C.

New Sydenham Society—Irregular—Subscription 21/—H. K. Lewis, 136, Gower Street

New York Medical Journal—Weekly 33, Bedford Street, W.C.

New York Medical Record—Weekly 6d—Kegan Paul & Co., Charing Cross Road, W.C.

Nursing Directory—Annually 5/—28 & 29, Southampton Street

Nursing Notes—Monthly 2½.—12, Buckingham Street, W.C.

Nursing Record—Weekly 1d.—11, Adam Street

Odontological Society, Transactions of—Monthly during Sessions 2/6—87, Great Titchfield Street

Ophthalmic Hospital Reports—Yearly 5/—J. & A. Churchill, 7, Great Marlborough Street

Ophthalmic Review—Monthly 1/—J. & A. Churchill, 7, Great Marlborough Street

Ophthalmological Society's Transactions—Yearly 12/6—J. and A. Churchill, 7, Great Marlborough Street

Pathology & Bacteriology, Journal of—Quarterly—21/- per annum—Y. J. Pentland, West Smithfield, E.C.

Pediatrics—Fortnightly 8/- per annum—Great Titchfield Street

Pharmaceutical Journal—Weekly 4d—5, Searle Street, Lincoln's Inn, W.C.

Pharmaceutical Society, Calendar of—Annually 2/—17, Bloomsbury Square

Pharmacy, Monthly Magazine of—Monthly 6d—Burgoyne, Burbidges & Co. 16, Coleman St.

Physiology, Journal of—21/- per volume—Ave Maria Lane

Polyclinic—Monthly 1/—Bale, Sons and Danielsson, Lim., Great Titchfield Street

Practitioner—Monthly 2/—Cassell & Co. Lim., Ludgate Hill, E.C.

Psychical Society, Proceedings of the—Occasionally—Kegan Paul and Co. Charing Cross Road, W.C.

Public Health—Monthly 1/—129, Shaftesbury Avenue, W.C.

Quarterly Medical Journal, 2/-—Pawson & Brailsford, Sheffield

Quekett Microscopic Club, Journal of—Half-yearly 3/6—Williams and Norgate, 14, Henrietta St.

Registrar General's Return of Births, Deaths & Marriages—Weekly, Quarterly & Annually—Eyre & Spottiswoode, 9, East Harding Street, E.C.

Röntgen Ray, Archives of the—Quarterly 4/-—129, Shaftesbury Avenue, W.C.

Royal College of Surgeons' Calendar—Annually 1/-—Taylor and Francis, Red Lion Court, Fleet Street, E.C.

Royal Microscopical Society, Journal of—Bi-Monthly, 30/- per annum—Williams & Norgate, Henrietta St., Covent Garden.

Sanitary Journal—Monthly 1/-—North Frederick St., Glasgow

Sanitary Record—Weekly 3d; 12/6 per annum—5, Fetter Lane

Science Gossip—Monthly 6d.—110, Strand

Scientific American—Weekly, per annum 18/-—Kegan Paul & Co. Charing Cross Road, W.C.

Scientific American Supplement—25/- per annum—Kegan Paul & Co., Charing Cross Rd., W.C.

Scottish Medical & Surgical Journ.—Monthly 2/-—W. F. Clay, Teviot Place, Edinburgh

State Medicine, Journal of—Monthly 2/-—Baillière & Co., King William Street, W.C.

St. Bartholomew's Hospital Reports—Yearly—15, Waterloo Place

St. Thomas's Hospital Reports—Yearly 8/6—J. & A. Churchill, 7, Great Marlborough Street

Therapeutic Gazette—Monthly, 10/- per annum—W. M. Warren, 111, Queen Victoria Street, E.C.

Therapist, the—Monthly 6d—1, 3, and 5, Marylebone Lane, W.

Treatment—Fortnightly 6d—129, Shaftesbury Avenue, W.C.

Tropical Medicine, Journal of—Monthly 2/-—Bale, Sons, and Danielsson, Lim., Great Titchfield Street

Veterinary Journal—Monthly 1/6—Baillière & Co., King William Street, W.C.

West London Medical Journal—Quarterly 1/6—Bale, Sons, and Danielsson, Ltd., Great Titchfield Street, W.

Westminster Hospital Reports—Yearly 8/-—7, Gt. Marlborough Street

Year Book of Pharmacy—Annually 10/-—J. & A. Churchill, 7, Great Marlborough Street

Zoological Record—Annually 30/-—Gurney & Jackson, Paternoster Row

Zoological Society of London, Proceedings—Quarterly 3/- plain; 12/- coloured—Longmans & Co Paternoster Row

Zoologist—Monthly 1/-—Simpkin and Co. Paternoster Row

The Medical Annual Note Book.

It is easier to make a note of a thing than to remember *where* the note was made. The following pages are indexed under their respective headings, and any note can be immediately found when required.

NOTES.

Copy here any formula or fact you wish to keep for reference. These pages are indexed under the word "Notes."

CONDAL WATER NATURE'S REMEDY FOR CONSTIPATION.

NATURAL APERIENT WATER of the sulphate of Soda Class from Rubinat, Spain. Guaranteed absolutely natural and bottled at the Springs. Contains about 20 grains of sulphate of soda Glauber's Salts per fluid ounce, and only 1⅛ grain of sulphate of magnesia (Epsom Salts), also 1 grain of chloride of soda. It thus differs from the German and Hungarian "Bitter Waters," which all have the great disadvantage of containing equal quantities, if not more, of the Epsom Salts than of the Glauber's Salts.

NOTES.

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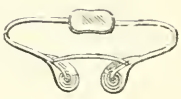

NOTES.

"Sparklets" Small Steel Receivers containing compressed Carbonic acid gas for the instantaneous Aeration of all Liquids in the Home.
See page 833.

ADDRESSES (PRIVATE).

GAUTIER FRÈRES' *ESTABLISHED* 1755.
FINE LIQUEUR BRANDY.
(20 YEARS OLD.) *See Advertisement, page liv.*

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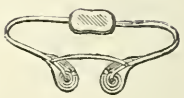

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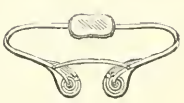

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CADBURY'S Cocoa, on the testimony of the *Lancet*, 'represents the standard of highest purity." It is entirely free from all foreign substances, such as Kola, Malt, Hops, &c., nor is alkali used to darken the colour (and so deceive the eye).

THE BRITISH MEDICAL JOURNAL—*Article on "Drugged Foods," June 4th, 1898—says:* "There is a general consensus of opinion that the addition of active drugs, belonging to the class of nervine stimulants, to beverages and articles of dietary in ordinary domestic use is not for the benefit of the community, and is likely in time to produce a deterioration of the public health. . . At the present moment we are beset by another danger arising from the addition of Kola to certain articles of Food. . . Kola has been found on analysis to contain 2·13 per cent. of caffeine. Caffeine is undoubtedly a useful drug when employed in suitable cases and in appropriate doses, but if taken habitually in large quantities it is capable of inducing an undesirable condition of over-stimulation of the nerve centres."

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Capital (Authorised) £1,000,000 | Accumulated Fund - £1,259,426
,, (Subscribed) £500,000 | Annual Income - - £281,843

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SPECIMEN RATES—Annual Premium to insure the Sum of £100.

Age next Birthday	Premium Payable for the whole of Life.		Limited Payments.				Age next Birthday.
			Table V. With Profits.		Table VI. Without Profits.		
	Table I. With Profits.	Table II. Without Profits.	20 Payments only.	25 Payments only.	20 Payments only.	25 Payments only.	
25	£2 3 10	£1 16 1	£3 3 3	£2 15 11	£2 12 1	£2 6 0	25
30	2 9 1	2 0 9	3 8 8	3 0 10	2 16 10	2 10 5	30

Endowment Insurances payable at a specified age or at previous death.

Age next Birthday.	Table III. With Profits.		Table IV. Without Profits.		* New Table with Deferred Profits.		Age next Birthday.
	Payable at 55.	Payable at 60.	Payable at 55.	Payable at 60.	Payable at 55.	Payable at 60.	
25	£3 5 6	£2 16 8	£2 15 0	£2 7 5	£2 19 9	£2 11 1	25
30	4 0 2	3 7 3	3 8 0	2 16 8	3 14 3	3 1 7	30

* In case of death before the Endowment Age. the sum insured only will be payable.

SPECIAL Attention is called to the Liberal Options which are now obtainable under any of the **Endowment Tables** of the Company, on the attainment of the Endowment Age. These are:—

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2.—The Insurance to be continued without further payment of premium for the original amount of the Policy. The Bonuses, and the balance of the sum insured after providing for this Paid-up Policy, will be paid in cash.

3.—A Paid-up Policy FOR AN INCREASED AMOUNT, payable at death.

In cases 2 and 3 proof of good health will be required.

4.—A **Pension** to be drawn for the remainder of life, and in addition, a Paid-up Policy, without further payment of premium, for the original sum insured.

5.—A **Pension** for the remainder of life.

6.—A **Pension** to wife or child.

7.—A **Deferred Pension** to commence at the death of the life insured, and be payable during the life of the widow, or of a child.

FIRE INSURANCES effected by the Company on the most moderate terms, according to the nature of the risks.

OFFICES AT BIRMINGHAM, BRISTOL, DUBLIN, GLASGOW, HULL, LEEDS, LIVERPOOL, MANCHESTER AND NEWCASTLE.

APPLICATIONS FOR AGENCIES INVITED.

INDEX TO LIFE ASSURANCE OFFICES.

A, *when Established*; B, C, D, *Annual Premiums to Insure £100 on death with Profits, at the age of* 30, 40, *and* 50; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M, *Mutual Offices*; P, *Proprietary Offices.*

Those marked with an asterisk (*) in the E column have not sent revised figures for 1900.

TITLE, &c., OF OFFICE.	A	B	C	D	E
					£
Abstainers and General, Life and Accident, Carrs Lane, Birmingham. *Sec.*, R. A. Craig, A.I.A. P	1883	49 11	55 10	82 3	160,000
Alliance, Fire and Life, Bartholomew Lane, E.C. *Gen. Man.*, Robert Lewis .. .. P	1824	48 9	64 5	90 9	3,361,114
Atlas, Fire & Life, 92, Cheapside, E.C. *Act.*, Robert Cross. *Sub. Man.*, A.W. Yeo. *Gen. Man.*, Saml. J. Pipkin. *Further particulars see page 722* P	1808	49 3	63 7	88 8	1,646,211
British Empire, Mutual Life, 4 & 5, King William Street, E.C. *Gen. Man.*, G. H. Ryan .. M	1847	47 2	63 9	92 3	2,850,000
British Equitable, Life, Queen Street Place, E.C. *Man.*, J. W. Fairey *Further particulars see page 725* .. .. P	1854	49 -	66 -	94 3	1,749,971
British Workman's and General, Life and Endowments, Broad Street Corner, Birmingham. *Chairman*, F.T. Jefferson, J.P. *Sec.*, S. J. Port, F.I.S. *Further particulars see page 726* .. P	1866	46 2	62 1	89 6	467,018
Caledonian, Fire and Life, 19, George Street, Edinburgh. *Man.*, D. Deuchar. London Office, 82, King William Street, E.C. .. .. P	1805	48 9	64 6	88 6	1,764,838
City of Glasgow, Life, 30, Renfield Street, Glasgow. *Gen. Man.*, William S. Nicol. London Office, 12, King William Street, E.C. *Lon. Man.*, James D. Milne .. .. P	1838	49 6	64 6	89 10	2,523,348
Clergy Mutual, Life, 2 & 3, Sanctuary, Westminster. *Act.*, F. B. Wyatt. *Sec.*, G. H. Hodgson M	1829	46 4	62 2	87 4	4,179,013
Clerical, Medical and General, Life, 15, St. James' Square, and Mansion House Buildings. *Act.*, W. J. H. Whittall .. .. .. P	1824	48/7	66 9	96 3	3,675,357
Colonial Mutual, Life and Annuity, 33, Poultry. *Man.*, Edward W. Browne .. .. M	1873	47/4	63 2	89/9	2,385,266
Commercial Union, Fire, Life and Marine, 24, 25, and 26, Cornhill, E.C. *Act.*, T. E. Young, B.A. *Assist. Actuary*, A. D. L. Turnbull .. P	1861	49/5	64 2	87/8	2,190,064
Co-operative, Life, Personal Accident, Fire & Fidelity, Long Millgate, Manchester. *Sec.*, James Odgers P	1867	45 8	61 5	88/4	23,888
Eagle, Life, 79, Pall Mall, S.W. *Gen. Man.* and *Sec.*, Geo. R. Jellicoe .. .. .. P	1807	50 8	65 5	91 4	2,458,212
Economic, Life, 6, New Bridge Street, Blackfriars. *Act.* and *Sec.*, G. Todd, M.A., F.I.A. M	1823	44 4	59 6	85 5	4,090,159
Edinburgh, Life and Annuities, 22, George Street, Edinburgh. *Man.*, G.M. Low, F.F.A., F.I.A. *Sec.*, A Hewat, F.F.A., F.I.A. London Office, 11, King William Street, E.C. *Sec.*, Frank Griffith P	1823	47 7	63 2	89/-	3,403,761
English and Scottish Law, Life, Annuity, Endowment, and Loan, 12, Waterloo Place, S.W. *Gen. Man.*, Albert G. Scott .. .. .. P	1839	49/6	65 2	90 11	2,344,906
Equitable Life Assurance Society, Mansion House Street, E.C. *Act.*, H. W. Manly, F.I.A. M	1762	53 5	67 11	90 7	4,681,088
Equity and Law, Life, 18, Lincoln's Inn Fields, W.C. *Act.*, A. F. Burridge, F.I.A. .. .. P	1844	48/10	64 6	90 9	3,546,993
Friends' Provident, Life, Annuities, &c., Bradford, Yorkshire. *Act.* and *Sec.*, John Bell Tennant. M	1832	45 9	58 1	79 3	2,770,000
General Life, 103, Cannon Street, E.C. *Man.* and *Sec.*, John Robert Freeman. *Further particulars see page 726* .. .. .. P	1837	49 10	63 4	92 3	1,727,923

A, *when Established*; B, C, D, *Annual Premiums to Insure £100 on death, with Profits, at the age of 30, 40 and 50*; E, *Assurance and Annuity Funds, exclusive of Paid-up Capital.* M. *Mutual Offices*; P. *Proprietary Offices.*

Title, &c., of Office.	A	B	C	D	E
					£
Gresham, Life, St. Mildred's House, E.C. *Man.* and *Sec.*, James H. Scott .. P	1848	49/-	65 8	94 3	7,223,205
Guardian, Fire and Life, 11, Lombard St., E.C., and 21, Fleet Street. *Sec.*, T. G. C. Browne.. P	1821	48 10	64 6	89 3	3,624,000
Hand-in-Hand, Fire, Life and Annuities, 26, New Bridge St., E.C. *Sec.*, H. H. Ray .. M	1696	53 7	69 10	96 2	2,908,935
Imperial, Life, 1, Old Broad Street, and 22, Pall Mall. *Gen. Man.* and *Act.*, J. Chisholm, F.I.A. *Sub. Man.* and *Joint Act.*, Fredk. Bell, F.I.A... .. .. P	1820	46 11	62/1	87 5	2,394,379
Lancashire, Life, Fire & Employers' Liability, Exchange St., Manchester. *Gen. Man.* Digby Johnson, London Office, 14, King William St., E.C. *Sec.*, John P. Read .. .. P	1852	48 6	63 6	90/6	1,030,168
Law Life, 187, Fleet Street. *Man.*, E. H. Holt. *Act.*, A. B. Adlard .. .. P	1823	49/4	64 10	91 -	4,050,296
Law Union & Crown Life, Fire, Accident & Annuities, 126 Chancery Lane. *Gen. Man.*, A. Mackay P	1825	48 4	64 -	89 10	4,158,519
Legal and General Life, 10, Fleet Street, E.C. *Act.* and *Man.*, E. Colquhoun .. .. P	1836	50 0	65 11	90 9	3,350,000
Life Association of Scotland, 82, Prince's Street, Edinburgh. *Man.*, John Turnbull Smith. *Sec.*, J. Sharp. London Office, 5, Lombard Street. *Sec.*, J. C. Wardrop .. .. .. P	1838	50 -	65 4	93 4	4,946,679
Liverpool and London and Globe, Fire, Life and Annuities, 1 Dale St., Liverpool. *Gen. Man. & Sec.*, John M. Dove. London Office, 7, Cornhill, E.C. *Act. & Rest. Sec.*, A. Hendriks, F.I.A. P	1836	49 3	65 6	91 3	5,354,331
London and Lancashire, Life, 66 & 67, Cornhill, E.C. *Gen. Man. & Act.*, W. P. Clirehugh. *Sec.*, G. W. Mannering .. .. P	1862	46 10	62 4	86 10	1,411,108
London Assurance Corporation, Fire, Life and Marine, 7, Royal Exchange. *Man.* of Life Dept., James Clunes. *Act.*, Geo. King .. P	1720	49 6	64 11	91 5	2,150,472
London, Edinburgh and Glasgow, Life, Industrial, and Accidents, Farringdon Street, E.C. *Sec.*, T. V. Cowling. *Gen. Man.*, Thos. Neill .. P	1881	48 11	64 7	92/-	272,118
London Life Association, Lim., 81, King William St., E.C. *Act.* and *Sec.*, C. D. Higham, F.I.A. M	1806	60/4	78 10	108 4	4,560,570
Marine and General Mutual, Life and Marine, 14, Leadenhall St., E.C. *Act.* and *Sec.*, S. Day, F.I.A. .. .. M	1852	48/10	65 11	91 11	995,538
Metropolitan Life, 13, Moorgate St., E.C. *Act.* and *Sec.*, L. M. Simon. *Further particulars see page 724* .. .. M	1835	49 9	66 4	92 -	2,024,949
National Assurance of Ireland, Fire, Life, and Annuities, 3, College Green, Dublin. London Office, 47, Cornhill, E.C. .. .. P	1822	48/7	64 3	91 7	360,762
National Guardian, Life, 21, New Oxford St., W.C. *Man. Dir.*, Jas. Turnbull. *Sec.*, Chas. Hugonin P	1865	48 6	64 8	86 8	216,363
National Mutual Life, 39, King Street, Cheapside. *Act.* and *Man.*, Geoffrey Marks, F.I.A. *Joint Secs.*, H. G. Rowsell and H. J. Lockwood. *Asst. Act.*, A. Levine, M.A., F.I.A. .. .. M	1830	48 4	63 7	89 6	2,600,428
National Provident, 48, Gracechurch Street, E.C. *Act.* and *Sec.*, Arthur Smither .. .. M	1835	50 2	66 3	91 1	5,400,000
New York Life, Trafalgar Buildings, Trafalgar Square, London, W.C. *Gen. Man.*, C. Seton Lindsay. *Sec.*, Wm. R. Collinson ..	1845	48/9	66/-	96 11	48,652,335
North British & Mercantile, Fire, Life & Annuities, 61, Threadneedle Street, E.C., and 64, Princes Street, Edinburgh. *Life Man.* and *Act.*, London, H. Cockburn, *Sec.*, F. W. Lance. *Further particulars see page 723* .. .. .. P	1809	49 10	66 1	91 11	10,990,405

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Title, &c., of Office.	A	B	C	D	E
					£
Northern Assurance, 1, Moorgate St., E.C. *Gen. Man.*, H. E. Wilson .. .. .. P	1836	49 -	64 8	90 10	3,687,482
Norwich Union, Life, Norwich. *Sec.*, J. J. W. Deuchar. London Office, 50, Fleet Street, E.C.	1808	45 8	59 6	85/3	3,893,357
Patriotic Life, Fire, Employers' Liability & Fidelity Guarantee, 9, College Green, Dublin. *Man.*, B. H. O'Reilly. *Act.*, Saml. Hunter. London Office, 69, King William Street, E.C. *Man.*, Charles E. Strong .. .. P	1824	48/8	64 5	90/4	193,612
Pearl, Life, London Bridge, City, E.C. *Man.*, P. J. Foley .. .. P	1864	49 -	65 -	92 -	971,273
Pelican, Life, 70, Lombard Street, 57, Charing Cross. *Gen Man.*, James Sorley, F.I.A., F.R.S.E. P	1797	48 11	64 9	91 7	1,374,357
Provident Clerks, Life and Benevolent Fund, 27 and 29, Moorgate Street, E.C. *Sec.*, John E. Gwyer.. .. .. M	1840	46 4	62 8	92 2	2,400,000
Provident, Life, 50, Regent St. *Sec.*, H. W. Andras P	1806	50 2	66 4	92 10	3,230,747
Prudential (Ordinary), Life, Holborn Bars. *Sec.*, D. W. Stable. *Further particulars see page 725* .. .. P	1848	49 6	65 11	91 11	12,150,021
Refuge, Life, Oxford Street, Manchester. *Joint Mans.*, Jas. Proctor & R. Wm. Green. London Office, 29, New Bridge Street .. .. P	1864	49 3	65 9	91 9	1,525,956
Rock, Life Annuity. Capital in Redemption, Workmen's Compensation & Accident, 15, New Bridge Street, E.C. *Act.*, G. S. Crisford, F.I.A. P	1860	42 5	55 11	81 2	2,237,175
Royal, Fire, Life and Annuities, Royal Insurance Buildings, Liverpool. *Man.*, Chas. Alcock. London Offices, Lombard St. *Sec.*, Jno. H. Croft P	1845	49 9	64 1	88 3	5,956,470
Royal Exchange Assurance. Fire, Life, Annuities, &c., Royal Exchange, and 29, Pall Mall. *Act.*, H. E. Nightingale, F.I.A. .. .. P	1720	48 11	65 -	92 7	2,609,238
Sceptre, Life and Endowments, 40, Finsbury Pavement, E.C. *Sec.*, J. G. Phillips.. .. P	1864	48 8	64 8	90 6	807 409
Scottish Amicable, Life, St. Vincent Place, Glasgow. *Man.*, N. B. Gunn. *Sec.*, W. G. Spens M	1826	51 9	69 3	90 1	4,145,788
Scottish Equitable, Life, 28, St. Andrew Square, Edinburgh. *Man.*, T. B. Sprague, M.A., LL.D. *Sec.*, J. J. McLauchlan. London Office, 19, King William Street, E.C. *Sec.*, F. R. Leftwich M	1831	50 3	65/5	90 9	4,268,035
Scottish Imperial, Life, 183, West George Street, Glasgow. *Man.* and *Act.*, James Stirling, F.F.A. London Office, 15, King William Street, E.C. P	1865	45 7	63 5	91 7	509,087
Scottish, Life, Accident and Annuities, 19, St. Andrew Square, Edinburgh. *Man.*, David Paulin, F.R.S.E. London Office, 13, Clements Lane, King William Street, E.C. *Sec.*, George Struthers P	1881	49/5	64 6	90 5	522,001
Scottish Metropolitan, Life, 25, St. Andrew Square, Edinburgh. *Man.*, Wm. G. Bloxsom. London Office, 8, King Street, E.C. *Man.*, H. E. Marriott .. .. P	1876	40/8	54/7	79 7	420,674
Scottish Provident, Life and Annuities, 6, St. Andrew Square, Edinburgh. *Man.*, J. G. Watson. *Secs.*, J. Lamb and H. R. Cockburn. London Office, 17, King William Street, E.C. *Sec.*, W. M. Monilaws .. .. M	1837	41 6	54/9	81 7	11,500,000
Scottish Temperance, Life and Accident, 105, St. Vincent St. Glasgow. *Man.*, Adam K. Rodger. London Office, 96, Queen Street, Cheapside. *Man.*, W. A. Bowie .. .. P	1883	48/6	63/9	89 10	311,052
Scottish Union and National, Fire, Life, and Annuities, 35, St. Andrew Square, Edinburgh. *Sec.*, J. K. Macdonald. London Office, 3, King William Street, E.C. *Sec.*, William Portcous.. P	1824	50 -	65 -	90 -	4,785,169

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Title, &c., of Office.	A	B	C	D	E
					£
Scottish Widows' Fund. Life and Survivorship, 9, St. Andrew Square, Edinburgh. *Man. & Act.*, A. H. Turnbull. *Sec.*, J. J. P. Anderson. London Office, 28, Cornhill, E.C. *Sec.*, J. W. Miller M	1815	51/9	66 3	90 7	15,500,000
Standard Life, 3, George Street, Edinburgh. *Man.* and *Act.*, S. C. Thomson. London Offices, 83, King William Street, and 3 Pall Mall East. *Sec.*, J. H. W. Rolland .. .. .. P	1825	48/11	64 5	89 -	9,155,310
Star, Life, Annuities, Endowments, 32, Moorgate Street, City. *Act.* and *Sec.*, H. G. Hobson P	1843	48/9	64 11	90 6	4,823,287
Sun, Life, 63, Threadneedle Street, E.C. *Act.*, R. Sewell. *Sec. & Gen. Man.*, E. Linnell. P	1810	49/2	66 6	94 2	4,570,000
Union, Fire and Life. Cornhill, and Baker Street. *Sec.*, C. Darrell .. .. .. P	1714	48/9	64/6	90 10	2,443,580
United Kent, Life and Annuities, High Street, Maidstone. *Gen. Man.*, Walter L. Seyfang. London Office, 124, Cannon St., E.C. *Man.*, A. Wallis P	1824	49/8	64/3	90/5	579,107
United Kingdom Temp., &c., Life, 1, Adelaide Place, London Bridge. *Sec.*, Johnson Brooks M	1840	48/10	64 11	90/6	7,000,000
Universal, Life, 1, King William Street, E.C. *Act.* and *Sec.*, G. F. Hardy, F.I.A. .. P	1834	49/-	65 -	92 3	*772,139
University, Life, 25, Pall Mall, S. W. *Act. & Sec.*, R. Todhunter, M.A. .. .. .. P	1825	49 11	65/4	91/5	1,002,073
Victoria, Life and Endowment, Memorial Hall Buildings, Farringdon Street, E.C. *Sec.*, Arthur J. Cook, A.I.A. .. .. .. M	1850	49/3	65/7	93 -	99,294
Wesleyan and General, Life, Annuities, Sickness, Corporation St., Birmingham. *Gen. Man.*, R. A. Hunt, F.S.S., A.I.A. London Office, 18, New Bridge Street, E.C. .. .. .. M	1841	48/9	66/6	96/3	495,787
Westminster and General, Life, 28, King St., Covent Garden, W.C. *Act.*, Ernest Woods, F.I.A. P	1836	48 10	65/-	90 6	613,538
Yorkshire, Fire and Life, St. Helen's Square, York. *Sec.*, J. A. Cunninghame. London Office, 2, Bank Buildings, Princes Street. *Sec.*, James Hamilton. *Further particulars as to a new Endowment Scheme, combining a large amount of assurance with a low premium, see page* 716 .. P	1824	49/1	64/9	91 7	897,386

Medical Sickness and Accident, 33, Chancery Lane, W.C. *Sec.*, F. Addiscott, F.I.A., secure to registered members of the Med. Prof., and Licentiates of Dental Surgery in United Kingdom, a weekly allowance during incapacity from sickness or accident. Mutual. Established 1884. Assurance and Annuity Funds £140,000.

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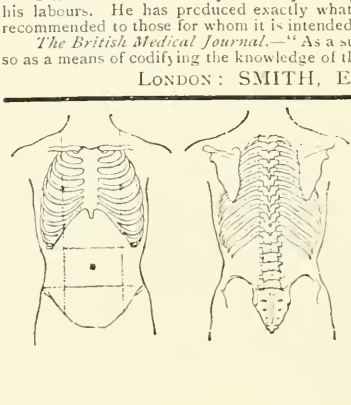

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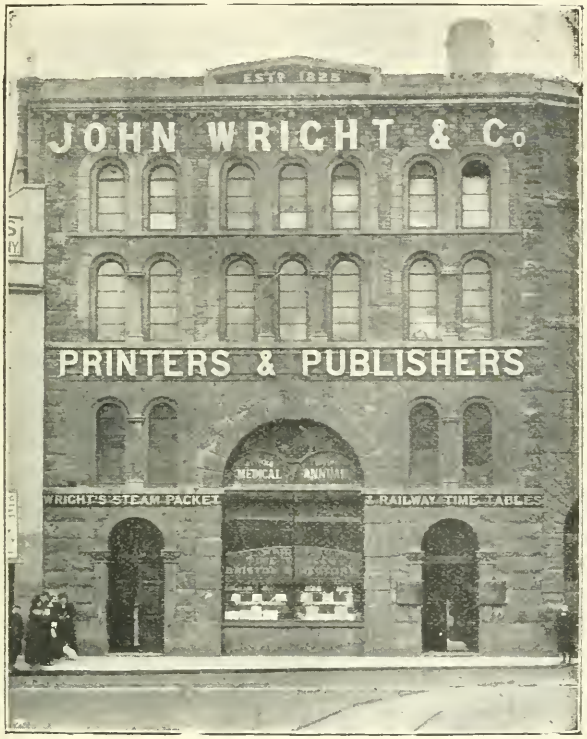

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Assistant Physician-Accoucheur—Dr. Griffith

Ophthalmic Surgeons—Mr. Vernon, Mr. Jessop

Dental Surgeons—Mr. Paterson, Mr. Ackery.

THE COLLEGE.

Students attending the Practice of the Hospital, or the Lectures in the Medical School, are admitted to residence in the College within the Hospital walls, subject to the College Regulations.

LECTURERS.

Medicine—Sir Dyce Duckworth, Dr. Moore
Surgery—Mr. Marsh, Mr. Walsham
Descriptive and Surgical Anatomy—Mr. Bruce Clarke, Mr. Lockwood
General Anatomy and Physiology, with Histology—Dr. Klein, F.R.S., Dr. Edkins
Chemistry & Practical Chemistry—Dr. Chattaway
Midwifery—Dr. Champneys
Physics—Mr. F. Womack
Materia Medica—Sir Lauder Brunton, F.R.S., Dr. Calvert
Botany—Rev. George Henslow
Forensic Medicine—Dr. Hensley
Hygiene—Dr. Hamer
Biology and Comparative Anatomy—Dr. Shore
Pathological Anatomy—Dr. Andrewes
Ophthalmic Surgery—Mr. Vernon
Psychological Medicine—Dr. Claye Shaw.

CLINICAL LECTURES

Are given during the Winter and Summer Sessions.

Clinical Medicine—Dr. Church, Dr. Gee, Sir Dyce Duckworth, Dr. Hensley, Sir Lauder Brunton
Clinical Surgery—Mr. Willett, Mr. Langton, Mr. Marsh, Mr. Butlin, Mr. Walsham.
Midwifery and Diseases of Women—Dr. Champneys.

SPECIAL DEPARTMENTS.

Diseases of the Skin—Dr. S. Ormerod
Orthopædic Surgery—Mr. Bruce Clarke
Diseases of the Ear—Mr. Cumberbatch
Diseases of the Eye—Mr. Vernon, Mr. Jessop
Practical Surgery—Mr. D. A. Power, Mr. Waring
Practical Anatomy—Mr. Bailey, Mr. Phillips
Assistant Demonstrators—Mr. Christopherson, Mr. Mundy, Mr. Rawling, Mr. Douglas
Practical Physiology—Dr. Edkins
Assistant Demonstrators—Dr. Langdon Brown, Mr. Bainbridge
Operative Surgery—Mr. D. A. Power, Mr. Waring, Mr. Bailey
Practical Medicine—Dr. West, Dr. Drysdale, Dr. Horder
Practical Midwifery—Dr. Morrison.

Medical Registrars—Drs. Calvert and Garrod. *Surgical Registrar*—Mr. Waring.

SCHOLARSHIPS AND PRIZES.—Open Scholarships in Science (founded 1873). These Scholarships, four in number, of the value of £150, £75, £75, £50, are tenable for one year. Candidates must be under twenty-five years of age for those of £75, and under twenty-one years of age for the others, and must not have entered for the medical or surgical practice of any London medical school. The Jeaffreson Exhibition, of the value of £20, is an open exhibition in Classics, Mathematics, and Modern Languages.—A Shuter Scholarship, £50, in Anatomy, Physiology, and Pharmaceutical Chemistry, at entrance (limited to graduates in arts of Cambridge).—A Senior Scholarship, £50, in Anatomy, Physiology, and Chemistry.—Lawrence Scholarship and Gold Medal, of the value of 40 guineas (founded 1873 by the family of the late Sir William Lawrence).—Two Brackenbury Scholarships, each £30, in Medicine and Surgery.—Four Junior Scholarships in the subjects of study of the first year; 1, £30; 2, £20; 3, £25; 4, £15.—The Wix Prize is awarded for the best essay on the following subject: "The Life and Works of Sir C. Bell."—The Bentley Prize for the best report of cases occurring in the wards of the hospital during the previous year.—The Kirkes Gold Medal and Scholarship of 30 guineas for Clinical Medicine.—The Hichens Prize for the best examination in "Butler's Analogy."—Foster Prize for the best examination in Practical Anatomy (senior).—The Treasurer's Prize for the best examination in Practical Anatomy (junior).—The Harvey Prize for the best examination in Practical Physiology.

Special Classes are held for the Preliminary Scientific, and for the other Examinations at the University of London. Students preparing for other Examining Boards are arranged in classes and examined by the Lecturers, Demonstrators, and Assistant Demonstrators.

Fee for Lectures and Hospital Practice, 150 *guineas if paid in one sum, or* 160 *guineas if paid by Instalments. Payment in either of these ways entitles a Student to a Perpetual Ticket.*

Communications to be addressed Dr. James Calvert, Warden of the College, St. Bartholomew's Hosp.

University College, BRISTOL.

FACULTY OF MEDICINE.

THIS COLLEGE is the only Institution in the West of England which provides a complete Medical Curriculum.

The lectures and instruction given in the Faculty of Arts and Science of University College, Bristol, are adapted to the Matriculation Examination of the University of London, and to the Preliminary Examination of the College of Preceptors, and also to the Preliminary Scientific Examination of the University of London; and Students can complete in Bristol the entire course of study required for the Medical and Surgical Degrees of the University of London, the Diplomas of the Royal College of Physicians of London and the Royal College of Surgeons of England, and of the Apothecaries' Society of London, and for the Examinations of the Army and Navy Boards.

A complete Dental Curriculum is also provided.

It is now arranged that Students of the College shall be admitted to the clinical practice of the Bristol Royal Infirmary and the Bristol General Hospital conjointly, and consequently both these institutions are open to all Students.

The Infirmary and the Hospital comprise between them a total of 470 beds; and both have very extensive Out-patient Departments, Special Departments for the Diseases of Women and Children, and of the Eye, Ear, and Throat, besides large Out-door Maternity Departments, and Dental Departments.

Students of the College also have the privilege of attending the practice of the Bristol Royal Hospital for Sick Children and Women, containing 104 beds, and that of the Bristol Eye Hospital, with 28 beds. The total number of beds available for Clinical Instruction is therefore 602.

Fever Hospital Practice is attended at the Hospitals for Infectious Diseases, of the Sanitary Authority of the Corporation of Bristol; and Lunatic Asylum Demonstrations at the City and County Lunatic Asylum, Fishponds.

Very exceptional facilities are thus afforded Students for obtaining a wide and thorough acquaintance with all branches of Medical and Surgical work. Each Student has the opportunity of personally studying a large number of cases, and of acquiring practical skill in diagnosis and treatment.

FEES.—Composition Fee for Lectures, 65 Guineas or 55 Guineas. Dental Composition Fee, 55 Guineas.

Perpetual Medical and Surgical Practice, 20 Guineas each, or in one payment, 35 Guineas. Fever Hospital Practice and Lunatic Asylum Demonstrations, 3 Guineas each.

Scholarships and Prizes.—Numerous valuable Scholarships and Prizes are offered for Competition.

Entrance Scholarships.—(*a.*) University Entrance Scholarship, value £50; (*b.*) Lady Haberfield Entrance Scholarship, value about £30.

Special Six Months' Course for Diploma in Public Health.—Fee, 20 Guineas.

Medical Library.—Students have the use of a large and important collection of books, consisting of some 20,000 vols.

Prospectuses and all particulars may be obtained on application to

E. MARKHAM SKERRITT, M.D., *Dean.*

The Middlesex Hospital Medical School.

Hospital Staff and Lecturers.—Consulting Physicians: Dr. Coupland, Sir R. D. Powell, Bart., M.D. Physicians: Dr. Cayley, Dr. Fowler, Dr. Pasteur. Obstet. Physician: Dr. W. Duncan. Assist. Physicians: Dr. W. E. Wynter, Dr. A. F. Voelcker, Dr. Wethered, Dr. Thomson. Consulting Physician to Skin Department: Dr. Robert Liveing. Physician to Skin Department: Dr. Pringle. Assist. Obstetric Physician: Dr. R. Boxall. Consulting Surgeons: Mr. Nunn and Mr. Lawson. Surgeons: Mr. Henry Morris, Mr. Andrew Clark, Mr. Pearce Gould. Assist. Surgeons: Mr. J. B. Sutton, Mr. J. Murray, Mr. T. H. Kellock. Ophthalmic Surgeon: Mr. Wm. Lang. Aural Surgeon: Mr. Stephen Paget. Consult. Dental Surgeon: Mr. Turner. Dental Surgeon: Mr. Wm. Hern. Assist. Dental Surgeon: W. S. Nowell. Other Lecturers: Dr. Mickle, Dr. Kellas, Dr. Robinson, Dr. Young, Dr. Crombie, Mr. Foulerton, Mr. Greenwood.

Sixteen Resident Clinical Appointments are open to students annually. All Clerkships and Dresserships are awarded without fee.

Two Broderip Scholarships, of the value of **£60** and **£40** respectively, are awarded every year for proficiency in Clinical Knowledge.

The Murray Scholarship, founded in connection with the University of Aberdeen, is awarded every third year to a Student of the Middlesex Hospital. Next award in 1901.

The following are awarded annually:—

The Governors' Prize of **£21** (Clinical Work in Out-Patient Dept.).

The Hetley Prize, value **£25** (Clinical Medicine, Surgery and Ob tetrics).

The Lyell Medal, value **£5 5s.** (Surgical Anatomy & Practical Surgery).

The Leopold Hudson Prize. value **£11 11s.** (Surgical Pathology and Bacteriology).

The Freeman Scholarship, value **£30** (Obstetric Medicine and Gynæcology).

Prizes.—A Prize in Elementary Anatomy and Biology, value **£5 5s.**, will be given to the Student who, at the end of his first Winter Session, shall pass the best written and practical examination.

An Exhibition of the value of **£10 10s.**, will be given at the end of his second Winter Session to the Student who shall pass the best written and practical examination in Anatomy and Physiology.

Middlesex Hospital Entrance Scholarships.—Entrance Scholarships in Classics, Mathematics and Natural Science are offered for competition at the commencement of the Winter Session. Full particulars may be obtained on application to the Dean. Successful candidates are required to become general students of the School. Next Examination end of Sept., 1901.

Scholarships in Anatomy and Physiology.—An Annual Scholarship of the value of **£60** is open to Students of the Universities of Oxford and Cambridge who have already passed or completed the curriculum for the professional examinations in Anatomy and Physiology. *Subjects*: Anatomy and Physiology, including Histology. Next Examination end of Sept., 1901.

The Tutors *assist all Students, especially those who are preparing for examination, without extra fee; the necessity for obtaining private instruction is thus obviated.*

Medical and Surgical Registrar, Resident Medical Officer, Demonstrators of Anatomy.—These valuable appointments are open to qualified men as they become vacant.

For further information apply to **W. PASTEUR**, *Dean.*

UNIVERSITY of EDINBURGH.

Principal—SIR WILLIAM MUIR, K.C.S.I., D.C.L., LL.D., Ph.D., etc.

The **Winter Session** opens on 16th October (Practical Anatomy 1st, and Public Health Laboratory Work 3rd October), and closes on 22nd March; the **Summer Session** opens at the beginning of May and closes about the end of July.

FACULTY OF MEDICINE.

Dean—Professor THOMAS R. FRASER, M.D., LL.D., F.R.S.

The Faculty embraces thirteen Chairs and eight Lectureships; and attached to these Chairs there are about thirty Assistants and Demonstrators. Instruction is given in all the branches of Medical Science, viz.:—

PROFESSORS.

CHEMISTRY—Alex. Crum Brown, M.D., D.Sc., LL.D. ZOOLOGY—J. Cossar Ewart, M.D. BOTANY—Isaac Bayley Balfour, M.D., D.Sc. PHYSICS—P. G. Tait, M.A., D.Sc. ANATOMY—Sir William Turner, M.B., D.C.L., LL.D. PHYSIOLOGY—E. A. Schafer, LL.D. MATERIA MEDICA—T. R. Fraser, M.D., LL.D. PATHOLOGY—William S. Greenfield, M.D. PUBLIC HEALTH—C. Hunter Stewart, M.D., D.Sc. FORENSIC MEDICINE—Sir Henry D. Littlejohn, M.D., LL.D. MEDICINE—John Wyllie, M.D., LL.D. SURGERY—John Chiene, M.D. MIDWIFERY—Alexander Russell Simpson, M.D. CLINICAL SURGERY—Thomas Annandale, M.D. CLINICAL MEDICINE—T. R. Fraser, M.D., Wm. S. Greenfield, M.D., John Wyllie, M.D., A. R. Simpson (on Diseases of Women).

UNIVERSITY LECTURERS.

MENTAL DISEASES—T. S. Clouston, M.D. DISEASES OF THE EYE—G. A. Berry, M.B. CLINICAL INSTRUCTION ON DISEASES OF CHILDREN—Staff of Royal Hospital for Sick Children. EMBRYOLOGY AND VERTEBRATE ZOOLOGY—J. Beard, D.Sc. REGIONAL ANATOMY—D. Hepburn, M.D. ADVANCED PRACTICAL PHYSIOLOGY—T. H. Milroy, M.D., B.Sc. EXPERIMENTAL PHARMACOLOGY—W. C. Sillar, M.B., B.Sc. PATHOLOGICAL BACTERIOLOGY—D. A. Welsh, M.D., B.Sc. PHYSICS—C. G. Knott, M.A., D.Sc. DISEASES OF THE LARYNX, EAR, AND NOSE—P. M'Bride, M.D. TROPICAL DISEASES—A. Davidson, M.D. DISEASES OF THE SKIN—W. Allan Jamieson, M.D.

Practical Instruction is afforded, under the superintendence of the Professors, in Laboratories with the necessary appliances, and in Tutorial and Practical Classes connected with the above Chairs, and opportunities are afforded to Students and Graduates to extend their practical knowledge and engage in original research.

Opportunities for Hospital Practice are afforded at the Royal Infirmary, the Hospital for Sick Children, Maternity Hospital, the City Hospital, and the Asylum for the Insane. Upwards of 1500 beds are available for the Clinical Instruction of Students of the University.

Four Degrees in Medicine and Surgery are conferred by the University of Edinburgh, viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.); and Diplomas in Special Branches of Medical and Surgical Practice may also be conferred on Graduates in Medicine and Surgery of the University.

The minimum Class Fees for M.B. and Ch.B., including Hospital Fee (£12) amount to about £115, and the Matriculation and Examination Fees to £28 7s. An additional Fee of £10 10s. is payable by those who proceed to M.D., and £10 10s. by those who proceed to Ch.M.

The annual value of the Bursaries, Prizes, Scholarships, and Fellowships in the Faculty of Medicine amounts to about £3,600, and that of the other Bursaries, etc., tenable by Students of Medicine, amounts to about £1,820.

Instruction is also given in Public Health, and the Degrees of B.Sc. and D.Sc. in Public Health are conferred by the University.

Residences for Students, Graduates, and others, situated within easy reach of the University, afford excellent board and lodging on very moderate terms.

Further information as to Matriculation, the Curricula of Study for Degrees, etc., may be obtained from the Dean of the Faculty of Medicine; or from the Clerk of Senatus; and full details are given in the University Calendar, published by James Thin, 55, South Bridge.

By Authority of the Senatus,

August, 1900. L. J. GRANT, *Secretary of Senatus.*

Royal College of Surgeons of Edinburgh.

FOUNDED 1505.

Copies of the Regulations for the Fellowship, Licence, and Licence in Dental Surgery, with dates of Examinations, Curricula, etc., for the year 1900-1901, are now ready, and may be had on application to—

JAMES ROBERTSON, Solicitor, 48, GEORGE SQUARE, EDINBURGH,
Clerk to the College.

University of Durham.

COLLEGE OF MEDICINE, NEWCASTLE-UPON-TYNE.

DEGREES IN MEDICINE, SURGERY, AND HYGIENE.—Six Degrees and one Diploma are conferred by the University of Durham—viz., the Degrees of Bachelor in Medicine, Doctor in Medicine, Bachelor in Surgery, and Master in Surgery, Bachelor in Hygiene, and Doctor in Hygiene; and Diploma in Public Health.

Attendance at the University of Durham College of Medicine during one of the five years of professional study, or subsequently to qualification elsewhere, is required as part of the curriculum for the Degrees, except in the case of Practitioners of more than fifteen years' standing, who have attained the age of forty years, who can obtain the Degree after examination only.

The first three Examinations for the Degree of M.B. may be passed prior to the commencement of attendance at Newcastle.

A candidate who has a recognized qualification will be exempt from the first examination of the University of Durham except in the subjects of Chemistry and Physics, in which he will be examined; and a Candidate registered as a Medical Student before the 1st October, 1896, and who has passed the First Examination of the Conjoint Board in England of the Royal College of Physicians of London and the Royal College of Surgeons of England, will be exempt from the subject of Biology in the First Examination of the University of Durham.

A candidate who has passed the First and Second Examinations of the University will be exempt from the First and Second Examinations of the Conjoint Board in England, and will be entitled to present himself for the Final Examination of the Board on the completion of the necessary curriculum.

The Extra Arts Examination must be passed previously to the candidate's entry for his Final Examination for the Degree.

All information, together with Examination Papers, &c., is given in the Calendar of the University of Durham College of Medicine, Newcastle-upon-Tyne, or may be obtained from the Secretary at the College.

Scholarships, &c.—A University of Durham Scholarship, value £100, for proficiency in Arts awarded annually to full Students in their first year only. The Dickinson Scholarship—value, the interest of £400, and a Gold Medal—for Medicine, Surgery, Midwifery and Pathology. The Tulloch Scholarship—value, the interest of £400—for Anatomy, Physiology, and Chemistry. The Charlton Scholarship—value, the interest of £700—for Medicine. The Gibb Scholarship—value, the interest of £500—for Pathology. The Luke Armstrong Scholarship—interest on £680—for Comparative Pathology. The Stephen Scott Scholarship—interest on £1000—for promoting the study of Surgery and allied subjects. Heath Scholarship—the late George Yeoman Heath, M.D., M.B., D.C.L., F.R.C.S., President of the University of Durham College of Medicine, has bequeathed the sum of £4000 to found a Scholarship in Surgery, the interest to be awarded every second year. Gibson Prize—value, the interest of £225—for Midwifery and Diseases of Women and Children. The Goyder Memorial Scholarship (at the Infirmary)—value, the interest of £325—for Clinical Medicine and Clinical Surgery. At the end of each Session a Prize of Books and Honours Certificates are awarded in each of the regular Classes. Assistant Demonstrators of Anatomy, Prosectors, and Assistant Physiologists are elected yearly. Pathological Assistants, Assistants to the Dental Surgeon, Assistants in the Eye Department, Clinical Clerks, and Dressers are appointed every three months.

The Royal Infirmary contains 280 beds. Clinical Lectures are delivered by the Physicians and Surgeons in rotation. Pathological Demonstrations are given as opportunity offers by the Pathologist. Practical Midwifery can be studied at the Newcastle Lying-in Hospital, where there is an Out-door Practice of about 300 cases annually.

FEES.

(*a*) A composition Ticket for Lectures at the College may be obtained—

I. By payment of 70 guineas on entrance.

II. By payment of 45 guineas at the commencement of the First Year, and 35 guineas at the commencement of the Second Year.

III. By three annual instalments of 35, 30, and 20 guineas respectively, at the commencement of the Sessional year.

(*b*) Fees for attendance on Hospital Practice:—

For 3 months' Med. & Surg. Practice, £5 5s. | For 1 year's Med. & Surg. Practice, £12 12s.
" 6 " " " " £8 8s. | " perpetual " " " £25 25s.

Or by three instalments at the commencement of the Sessional year—viz., First year, 12 guineas; Second year, 10 guineas; Third year, 6 guineas. Or by two instalments—viz., First year, 14 guineas; Second year, 12 guineas.

In addition to the above fees, the Committee of the Royal Infirmary require the payment of 2 guineas yearly up to three years from every Student attending the Infirmary for a year or part of a year. After three years of attendance, such payment will be no longer necessary.

(*c*) Single courses of Lecture, 5 guineas.

Fees for Lectures, etc., at the College must be paid to the Secretary, and Fees for Hospital Practice to the House-Physician at the time of entry.

Further particulars may be obtained from the Sec., PROF. HOWDEN, at the College.

VICTORIA UNIVERSITY.

The Yorkshire College,

LEEDS.

DEPARTMENT OF MEDICINE.

The Seventy-first WINTER SESSION will open on the 1st October, 1901. Entries are also taken for the SUMMER SESSION which begins on May 1st.

This College, together with the Leeds Infirmary, offers exceptionally favourable conditions for the education of Medical Students, and is equipped on the best modern lines.

The Prospectus and particulars of Entrance Scholarships may be obtained from the Registrar of the College, and information regarding Medical Studies from the Dean of the Department.

THE HOSPITAL FOR SICK CHILDREN,

Which contains 200 beds, and where 500 new Out-Patients are seen weekly, and 1700 attendances are made, has been recognised by the Conjoint Board of England as a place where six months of the fifth year may be spent in clinical work.

The Practice of the Hospital is open to Students who have completed four years of medical study and to qualified medical men.

The Medical and Surgical work of the Hospital includes:—

1. The Practice of the Hospital
2. Clinical Clerkships and Dresserships in the In-Patient Department
3. Clinical Assistantships in the Out-Patient Departments
4. Lectures and Demonstrations
5. The Pathological Department.

THE PRACTICE OF THE HOSPITAL

Out-Patients are seen every morning, commencing at 9 o'clock.

Medical In-Patients: Monday and Thursday and Tuesday and Friday at 2.30 and 3 0 respectively. Tuesday and Friday mornings at 9.30.

Surgical In-Patients: Wednesday and Friday mornings at 9.30; Monday, Tuesday, Thursday and Friday at 2.30. Operations on Monday and Friday afternoons, and Wednesday morning.

The Ophthalmic Surgeon attends on Thursday afternoons at 2 o'clock, and sees both In- and Out-Patients.

The Surgeon in charge of the Aural Department attends at 9 o'clock on Thursday morning. The Dental Surgeon at 9 on Wednesday mornings.

LECTURES AND DEMONSTRATIONS.

Medical: Thursday afternoon at 2.30 and 4.0 respectively; Friday mornings, 9.30.
Surgical: As opportunities occur, of which notices will be posted on the notice board of the Hospital.

Fee For attendance on the Practice of the Hospital for three months £2 2s.
Perpetual Ticket £3 3s.

All communications and enquiries for forms of application for posts of Clerks and Dressers, &c., should be addressed to—

Great Ormond St., Bloomsbury, W.C. **ADRIAN HOPE,** *Secretary.*

ST. PETER'S HOSPITAL

For Stone, Stricture, and Urinary Diseases, &c.

ESTABLISHED 1860.

HENRIETTA ST., COVENT GARDEN, W.C.

President—Rt. Hon. The Earl of Dunraven and Mount Earl, K.P.
Treasurer—F. A. Bevan, Esq.

St. Peter's Hospital is intended for Persons of both Sexes suffering from Stone in the Bladder and other Diseases of the Genito-Urinary Organs, and contains 2 Wards for Men, 24 Beds; 1 Ward for Women and Children, 2 Beds; and a Private Ward for Paying Patients.

The number of Patients treated during the last twelve months was **548** In-Patients, and **4,387** New Out-Patients, the latter being seen on Monday at 2 and 5; Tuesday at 2; Wednesday at 5; Thursday at 2; Friday at 2, Women and Children only; Saturday at 4.

A Donation of Ten Guineas constitutes a Life Governor; a Subscription of one Guinea an Annual Governor. Subscriptions and Donations will be thankfully received by Messrs. Barclay & Co., 54, Lombard Street, E.C.; Messrs. Hoare & Co., 37, Fleet Street, E.C.; or by—

IRWIN H. BEATTIE, *Secretary.*

EPSOM COLLEGE.

Treasurer—CONSTANTINE HOLMAN, M.D., J.P.
Head Master—REV. T. N. HART SMITH, M.A., late Scholar of Exeter College, Oxford; formerly Assistant Master at Marlborough College.
Secretary—J. BERNARD LAMB, Esq. | *Bursar*—W. D. CROSSLEY, Esq.

EPSOM COLLEGE is conducted as a *first-rate* Public School with a Medical foundation, and various privileges that are reserved to the Medical profession, but in every other respect *open to all classes alike*.

The educational work has been carefully arranged on the system that has proved so successful at Wellington College, Haileybury, Marlborough, and other public schools; on the Classical side the best training is given for the Universities and the learned professions; the Modern side has been tabulated to meet the requirements of the London University, the Army, and the Civil Service. Boys are also prepared for commercial pursuits.

For boys who are intended for the Medical profession no school in England possesses equal advantages; special training is provided for the London Matriculation and Preliminary Scientific examinations, and owing to the generosity of the London Hospitals, there are NINE scholarships *ranging in value from* 120 *guineas to* £150, giving a free education, offered ANNUALLY to boys leaving.

The buildings are admirably situated and well arranged; an excellent Library, Sanatorium, Gymnasium, Swimming Bath, Fives Court, and Carpenter's Shop are provided. The Cricket Grounds are very extensive. There is a Lower School for junior boys.

The College charges have been kept singularly moderate. The fees paid by the sons of Medical Men are at a reduced rate.

The religious teaching of the School is in accordance with the doctrines and formularies of the Church of England.

With the exception of boys in the Headmaster's and other houses, all pupils are boarded and lodged within the College walls.

Scholarships, open to all comers, value £30 a year, are offered ANNUALLY.

School Lists giving full information as to Fees, Scholarships, Exhibitions, &c., School Prospectuses, and Forms of Application, may be obtained on application to the Bursar.

RESULTS OF EXAMINATIONS 1899 & 1900.

36 Boys passed at the London Matriculation Examination; 13 passed the Preliminary Scientific Examination; 18 Boys obtained Higher Certificates at the Joint Universities' Examination, and 67 obtained Lower Certificates.

RICHMOND, WHITWORTH & HARDWICKE HOSPITALS
DUBLIN.

The Session 1900-1 commenced on Monday, October 1, 1900. These Hospitals contain nearly 300 beds.

PHYSICIANS—Sir J. T. Banks, K.C.B., M.D., LL.D., Physician in Ordinary to the Queen in Ireland; Late Regius Professor of Medicine, Univ. Dublin; Member of the Senate of the Royal Univ. Ireland.
Joseph O'Carroll, M.D., Examiner in Medicine, Royal University.
J. B. Coleman, M.D., late Physician Jervis Street Hospital.

SURGEONS—Sir William Thomson, F.R.C.S.; Ex-President R.C.S.; Member of the Senate of the Royal Univ. Ireland; Surgeon to the Queen in Ireland.
Sir Thornley Stoker, Ex-President R.C.S.; Fellow and Examiner in Surgery, Royal University; Surgeon to Swift's Hospital for Lunatics
Thomas Myles, M.D., F.R.C.S., President Royal College of Surgeons.

OPHTHALMIC SURGEON—A. H. Jacob, M.D., Oculist to the Lord Lieutenant.

Apply to Sir W. THOMSON, F.R.C.S., Treasurer, 54, St. Stephen's Green, E.; or to Dr. J. O'Carroll, 43, Merrion Square, East, Dublin.

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FOR THE USE OF STUDENTS AND PRACTITIONERS.

By THOS. CARWARDINE, M.S. (Lond.), F.R.C.S.

With Special Chapters on the EYE, EAR and TEETH, by Messrs. F. R. CROSS, W. H. HARSANT, and W. R. ACKLAND; On the NOSE and LARYNX, by Dr. P. WATSON WILLIAMS; and SURGICAL BACTERIOLOGY, by Dr. J. O. SYMES.

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LONDON HOMŒOPATHIC HOSPITAL

GREAT ORMOND STREET, BLOOMSBURY, W.C.

A GENERAL HOSPITAL FOR MEN, WOMEN AND CHILDREN.

INCLUDING SPECIAL DEPARTMENTS FOR

Diseases of Women; Diseases of the Skin; Diseases of the Eye; Diseases of the Throat, Nose and Ear; Diseases of Children; Diseases of the Nervous System; Dental Diseases; Electrical, and Rontgen Ray Cases.

President: THE EARL OF WEMYSS AND MARCH.

Vice-Presidents:

THE EARL OF DYSART
THE EARL CAWDOR
THE LORD EBURY
THE LORD GRIMTHORPE
SIR CHARLES ISHAM, BART.

HOSPITAL STAFF:

Consulting Physicians—Dr. Dudgeon, Dr. Dyce Brown, Dr. John H. Clarke
Physicians—Dr. Galley Blackley, Dr. Byres Moir, Dr. Washington Epps
Assist. Physicians—Dr. Goldsbrough, Dr. Mac-Nish, Dr. Spencer Cox, Dr. J. R. P. Lambert, Dr. T. G. Stonham, Dr. Lestock Reid
Surgeon—Mr. Knox Shaw
Assist. Surgeons—Mr. Dudley Wright, Mr. James Johnstone
Surgeon for Diseases of the Throat, Nose, and Ear—Mr. Dudley Wright
Assist. Surgeon for Diseases of the Throat, Nose, and Ear—Mr. Vincent Green
Ophthalmic Surgeon—Mr. Knox Shaw
Physician for Dis. of Women—Dr. G. H. Burford
Assist. Phys. for Dis. of Women—Dr. E. A. Neatby, Mr. James Johnstone
Phys. for Dis. of the Skin—Dr. Galley Blackley
Phys. for Dis. of Children—Dr. Roberson Day
Pathologist—Dr. Watkins
Consulting Anæsthetist—Dr. Roberson Day
Anesthetists—Dr. J. R. P. Lambert, Dr. Beale

Practical Instruction in *Homœopathic Therapeutics* is given daily, in the Wards, and the Out-Patient Department. The instruction at this Hospital is specially intended for:—(1,) Medical Men who are already qualified and who desire to obtain a knowledge of Homœopathy in addition to their other acquirements (2,) Medical Students in their fifth year.

Full particulars may be obtained from G. A. CROSS, *Secretary-Superintendent.*

ROTUNDA LYING-IN HOSPITAL, DUBLIN.

Master: R. D. PUREFOY, M.D., T.C.D., F.R.C.S.

Assistant Physicians: H. C. LLOYD, M.D.; P. CARTON, M.D.

Extern Maternity Assistants: DR. HENDERSON; DR. CRAWSHAW.

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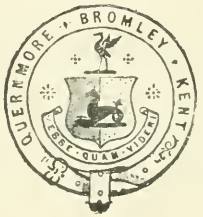

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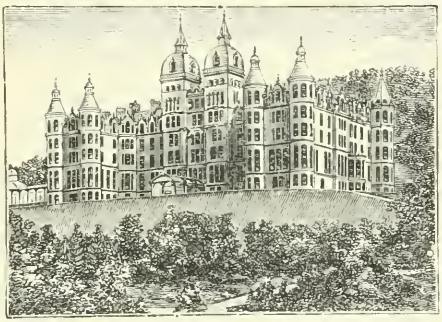

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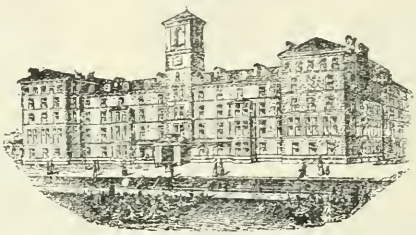

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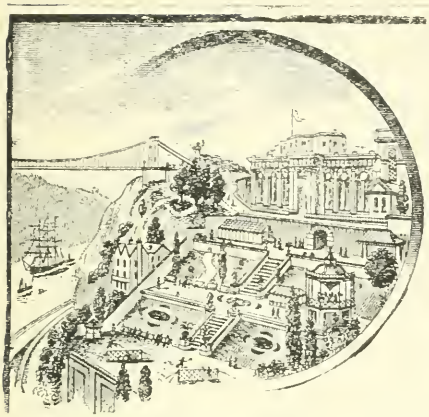

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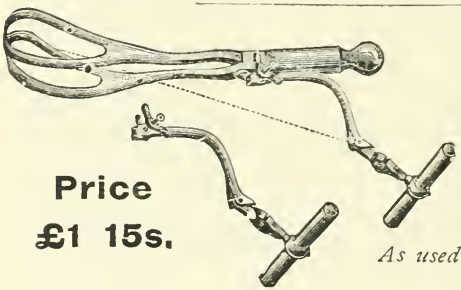

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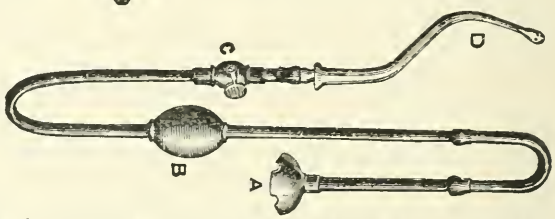

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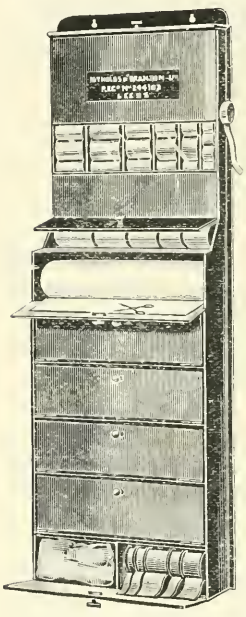

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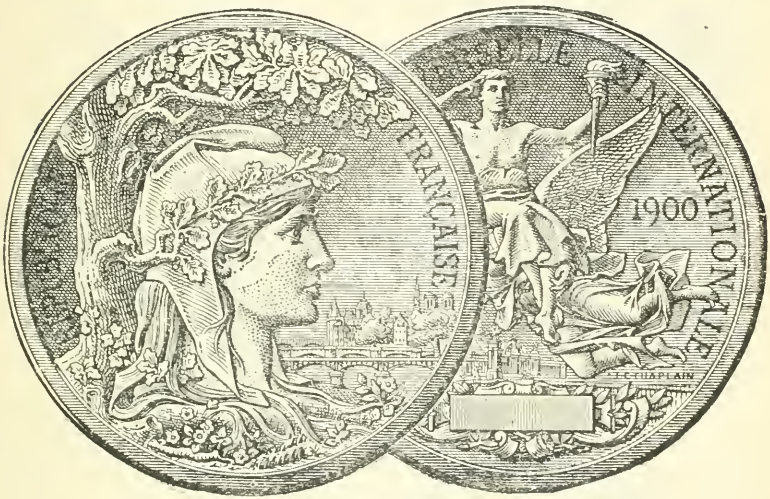

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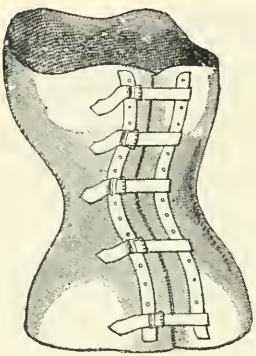

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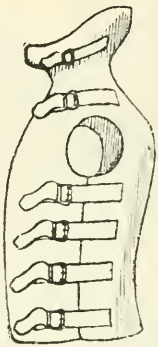

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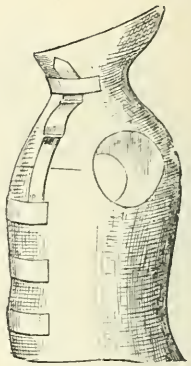

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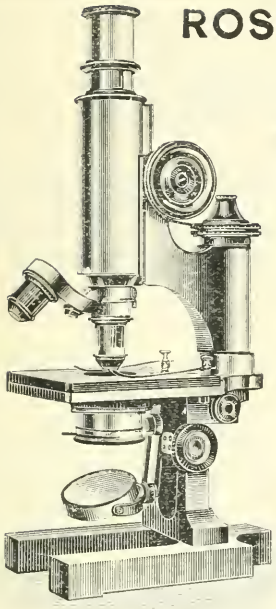

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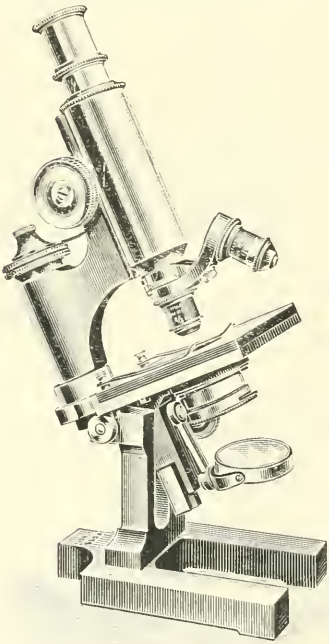

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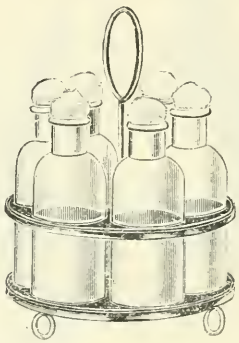

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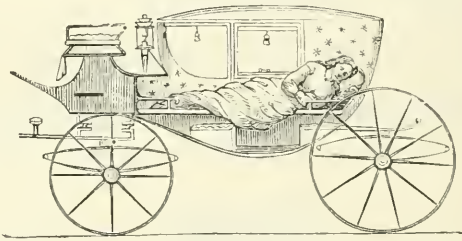

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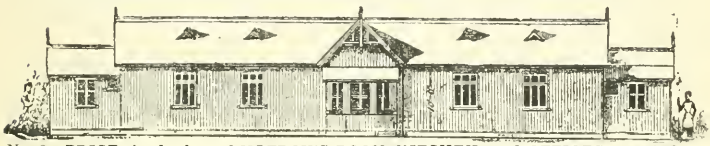

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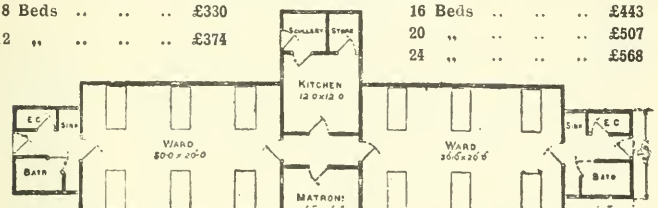

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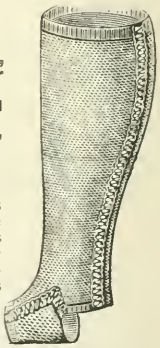

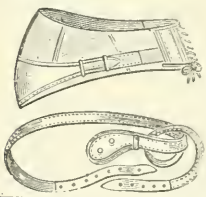

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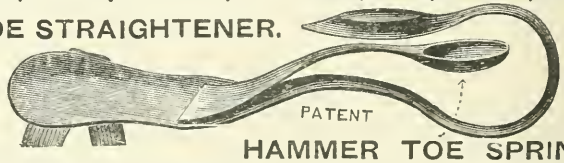

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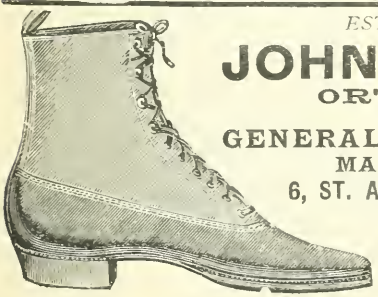

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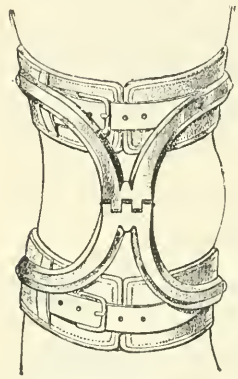

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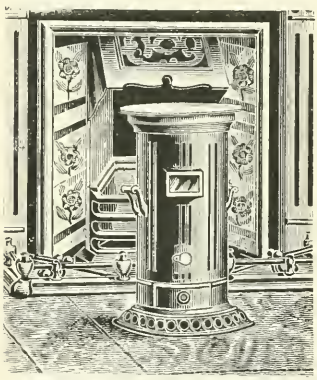

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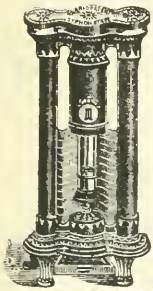

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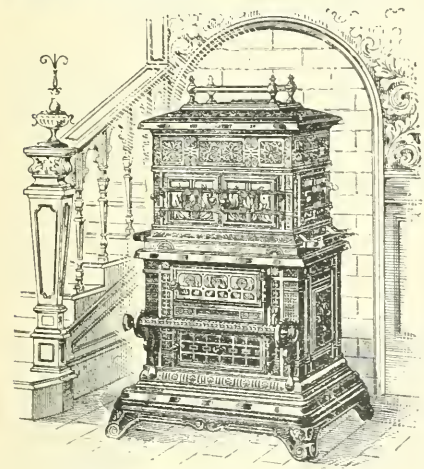

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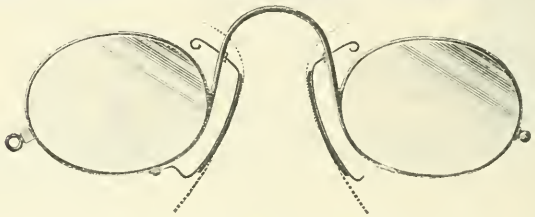

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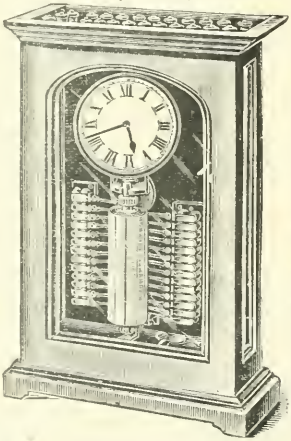

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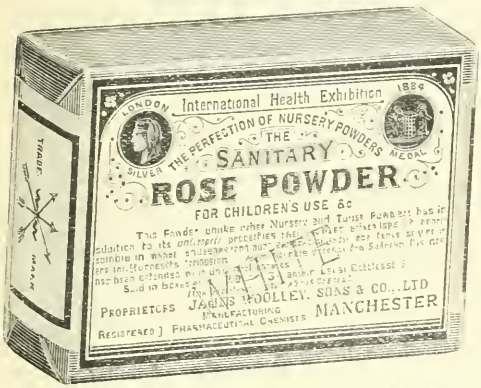

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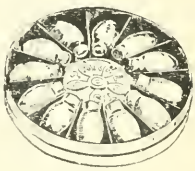

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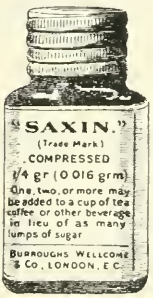
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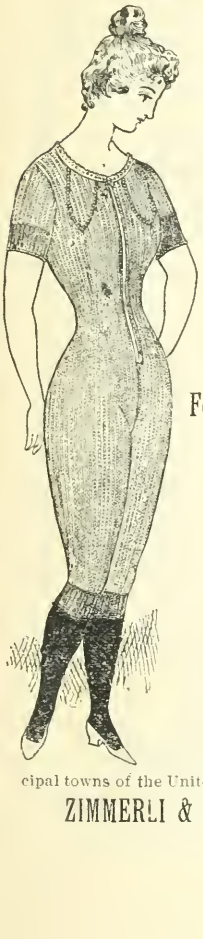

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See Description, page 649, "EDITOR'S TABLE."

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